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AND

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## INDEX.

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- Adams, W. S. Congestion of the Liver and Pneumonia, 76.  
 Advertising, 472.  
 Afghan War, A Retrospect of the, 124.  
 Age of Animals, 469.  
 Alfort Veterinary School, 388.  
 Alkaloids, Animal, 432.  
 Animals in the United States, 68.  
 Annual Dinner, 32.  
 Anthrax, 454.  
 Anthrax, Protective Inoculation for, 227.  
 Anthrax, A few Practical Notes on, 404.  
 Anthrax in Natal, An Outbreak of, 327.  
 Anthrax, Remittent, 241, 243, 407.  
 Anthracoid Pork, The effect of Salting upon, 355.  
 Army Veterinary Department, 65, 225, 302.  
 Army Veterinary Association, 123, 183.  
 Assistantships, 146.  
 Azoturia in the Horse—How Doctors differ! 30.
- Bacteria, Antagonism between, 304.  
 Berlin Veterinary University, 141.  
 Blood in Purpura, Chemistry of the, 73.  
 Border Counties Veterinary Medical Society, 270, 455.  
 Buffalo-gnat, 303.  
 Burke, R. W. Purpura Hæmorrhagica, 237.  
 Burke, R. W. Remittent Anthrax, 241, 343, 407.  
 Burke, R. W. "Surra," or Progressive Pernicious Anæmia, 5.
- Cancer Bacillus, 470.  
 Case, An Interesting, 341.
- Castration, 240.  
 Castration, Unusual Results of, 13.  
 Cattle Plague in the Pig, 248.  
 Central Veterinary Medical Society, 176, 464.  
 Cerebellar Ataxy in a Kitten, 445.  
 Charger, An old, 304.  
 Chemistry of the Hoof of the Horse, 313.  
 Chorea, 340.  
 Cocaine as a Local Anæsthetic, 239.  
 Conference, The, 175.  
 Congestion of the Liver and Pneumonia, 76.  
 Contagious Diseases among Animals in London, 68.  
 Contagious Pleuro-pneumonia, 143.  
 Contagious Pleuro-pneumonia in Goats, 458.
- CORRESPONDENCE:—  
 A Glance at our Present Position, 147.  
 Advertising, 472.  
 Assistantships, 146.  
 Cow Disease and Scarlatina, 145.  
 Cruelty to Animals, 307.  
 Cure of Roaring by Galvanism, 69.  
 Dislocation, 144.  
 Equine Syphilis, 390.  
 Examiners, 72, 144.  
 Examiners and Examinees from a General Practitioner's point of view, 228, 231.  
 Experimental Therapeutics, 309.  
 Fair Play and no Favour, 71.  
 Lancashire Veterinary Association, 152.  
 Meetings of Societies, 472.  
 Office of Treasurer, 152.  
 Poet-Laureate, Our, 471.  
 Pole-axe in Pleuro-pneumonia *versus* Inoculation, 470.  
 Social Status and Professional Etiquette, 71.  
 Therapeutics, 69.



- Veterinary Education and Examinations, 311.  
 Veterinary Education, 391.  
 Cow Disease and Scarlatina, 145.  
 Cox, W. Recollections of Practice, Old and New, 400.  
 Cruel Plant, A, 306.  
 Cruelty to Animals, 307.  
 Cruelty to a Cow, 305.  
 Cunningham, C. Inoculation in Pleuro-pneumonia, 332.
- Dairy Cows, Overstocking, 141.  
 Dick Veterinary College, 380.  
 Diseases of the Facial Region, and of the Mouth of the Horse, 51.  
 Dislocation, 144.  
 Dog Carriages, 227.
- Ectozoa, 205.
- EDITORIAL:—  
 Electricity as a Therapeutic Agent, 421.  
 Extinction of Rabies and Hydrophobia, 157.  
 Is Human Scarlatina derived from the Cow? 15.  
 Legislation and Veterinary Science, 351.  
 Pasteur's Treatment of Rabies and Hydrophobia, 81.  
 Veterinary Education, 246.  
 Effect of Recent Legislation on the Contagious Diseases of Animals, 142.  
 Electricity as a Therapeutic Agent, 421.  
 Endo-Carditis, Rheumatic, 156.  
 Equine Syphilis, 390.  
 Equine Syphilis in United States of America, 161.  
 Eruptive Disease of Cows, 454.  
 Examiners, 72, 144.  
 Examiners and Examinees, 228, 231.  
 Examination Disturbances, 32.  
 Examinations of the Royal College of Veterinary Surgeons, 220.  
 Examinations of the Royal College of Veterinary Surgeons in Scotland, 221.
- Fair Play and no Favour, 71.  
 Fenton, G. H. Unusual Results of Castration, 13.  
 Fitzwygram Prize Competition, 94.
- Galtier. Virulence of Tubercular Matter, 355.  
 Galvanism, Cure of Roaring by, 69.  
 Gangrenous Mammitis in Sheep, 318.  
 Giordano, D. Micro-organism of Tetanus, 423.  
 Glance at our Present Position, 147.  
 Glander Bacillus, 249.  
 Glasgow Veterinary College, 216, 447.  
 Good Example, A, 304.  
 Green, J. R. Traumatic Pericarditis, 339.  
 Gresswell, A. The Horse, 250.
- Hæmorrhagica, Purpura, 1, 237.  
 Helminths of our Domesticated Animals, 200.  
 Hernia, Uterine, in a Terrier, 233.  
 Hollingham, A. E. A Few Practical Notes on Anthrax, 404.  
 Hoof of the Horse, Chemistry of, 313.  
 Horse, The, 250.  
 Horse-sickness, South African, 47.  
 Horse Supply, Military, 228.  
 Hunt, H. J. Schirrous Cord, 154.  
 Hunter, T. Castration, 240.  
 Hydrophobia, Protective Inoculation for, 468.  
 Hydrophobia, Old Cures for, 66.  
 Hydrophobia, Statistics of, 67.  
 Hypodermic Injection of Extract of Mustard, 434.
- Iodine, Clinical Uses of, 300.
- Joint, Open, 296.  
 Jubilee, Her Majesty's, 167.  
 Jubilee Institutes for Animals, 67.
- JURISPRUDENCE:—  
 Veterinary Surgeons and Dog Licenses, 224.
- King, J. T. Cocaine as a Local Anæsthetic, 239.
- Lambert, J. Rabies and Hydrophobia, 352.  
 Lancashire Veterinary Medical Association, 152, 290, 453.  
 Lincolnshire Veterinary Medical Association, 196, 437.  
 Laryngismus Paralyticus, 3.  
 Legislation and Veterinary Science, 351.



- Leeney, H. Traumatic Pericarditis, 398.  
 Limont, Prof. Purpura Hæmorrhagica, 1.  
 Liver, Infarction of, Experimental, 443.  
 Liverpool Veterinary Medical Association, 50, 110, 296.  
 Mahon, F. C. Purpura Hæmorrhagica in the Horse, 413.  
 Meat Inspection in Berlin, 388.  
 Medical Society of London, 445.  
 Meetings of Societies, 472.  
 Microbes? What are, 297.  
 Micro-organism of Tetanus, 423.  
 Microbe of Wolf-rabies, The, 303.  
 Midland Counties Veterinary Medical Association, 188.  
 Milk Scarlatina, Observations on, 16.  
 Montreal Veterinary College, 384.  
 Nephritis caused by Bacillus, 422.  
 New Veterinary College, Edinburgh, 381.  
 Norfolk and Eastern Counties Veterinary Medical Association, 45, 113, 214.  
 North of England Veterinary Medical Association, 38, 216.  
 NOTES AND NEWS:—  
   Age of Animals, 469.  
   Alfort Veterinary School, 388.  
   Animals in the United States, 68.  
   Antagonism between Bacteria, 304.  
   Berlin Veterinary University, 141.  
   Buffalo-gnat, 303.  
   Cancer Bacillus, 470.  
   Contagious Pleuro-pneumonia in Goats, 468.  
   Contagious Pleuro-pneumonia, 143.  
   Contagious Diseases among Animals  
   Cruel Plant, 306.  
   Cruelty to a Cow, 305.  
   in London, 68.  
   Dog-Carriages, 227.  
   Inoculation for Contagious Pleuro-pneumonia, 227.  
   Good Example, 304.  
   Grand Veterinary Council in France, 388.  
   Justice to the Veterinary Profession, 227.  
   Jubilee Institutes for Animals, 67.  
   Meat Inspection in Berlin, 388.  
   Microbe of Wolf-rabies, 303.  
   Military Horse Supply, 228.  
   Old Charger, An, 304.  
   Old Cures for Hydrophobia, 66.  
   Overstocking Dairy Cows, 141.  
   Protective Inoculation for Hydrophobia, 468.  
   Protective Inoculation for Anthrax, 227.  
   Rabies, 389.  
   Rabies in Deer, 388.  
   Spratt's Food, 470.  
   Statistics of Hydrophobia, 67.  
   Swine Fever in Denmark, 470.  
   Swine Fever and Hog Cholera, 306.  
   Tanacetic Rabies, 469.  
   Trichinæ in Pork, 141.  
   Veterinary Surgeons in Russian Army, 304.  
   Veterinary Profession, 468.  
   Warning to Veterinary Surgeons, 388.  
 Nunn, J. A. Dislocation of the Shoulder in the Horse, 338.  
 Nunn, J. A. Protective Inoculation for Contagious Pleuro-pneumonia, 412.  
 Nunn, J. A. Rheumatic Endo-carditis, 156.  
 Obituary, 141, 225, 303, 387, 468.  
 Office of Treasurer, 152.  
 Paralysis of Tail from Fracture, 399.  
 Parturient Apoplexy, 129.  
 Pasteur's Treatment of Rabies and Hydrophobia, 81.  
 Pathological Society, 443.  
 Patho-Bacteriological Report, 262, 359.  
 Pericarditis, Traumatic, 339, 398.  
 Peuch, F. Effect of Salting upon the virulence of Anthracoid Pork, 355.  
 Pleuro-pneumonia in Cattle, 447, 453.  
 Pleuro-pneumonia in Goats, Contagious, 468.  
 Pleuro-pneumonia, Inoculation, 332.  
 Pleuro-pneumonia in Goats, Inoculation for Contagious, 227.  
 Pleuro-pneumonia, Inoculation as a Preventive, 209.  
 Pleuro-pneumonia, Poleaxe in, 470.  
 Pleuro-pneumonia, Protective Inoculation for, 412.  
 Poet-Laureate, Our, 471.  
 Pole-axe in Pleuro-pneumonia *versus* Inoculation, 470.



- Post-mortem Specimens, 46.  
Practice, Old and New, Recollections of. 400.  
PROCEEDINGS OF SOCIETIES:—  
Army Veterinary Association, 123, 183.  
Border Counties Veterinary Medical Society, 217, 270, 455.  
Central Veterinary Medical Society, 176, 464.  
Dick Veterinary College, 380.  
Examinations of the Royal College of Veterinary Surgeons, 220, 221.  
Glasgow Veterinary College, 216, 447.  
Lancashire Veterinary Medical Association, 290, 453.  
Lincolnshire Veterinary Medical Association, 196, 437.  
Liverpool Veterinary Medical Association, 50, 110, 296.  
Medical Society of London, 445.  
Midland Counties Veterinary Medical Association, 188.  
Montreal Veterinary College, 384.  
National Veterinary Association at Peterborough, 174.  
New Veterinary College, 381.  
Norfolk and Eastern Counties Veterinary Medical Association, 45, 113, 214.  
North of England Veterinary Medical Association, 38, 216.  
Royal Agricultural Society, 61, 223, 453.  
Royal College of Veterinary Surgeons, 24, 94, 167, 267, 366.  
Royal Counties Veterinary Medical Association, 208.  
Royal Veterinary College, 372.  
Scottish Metropolitan Veterinary Medical Society, 28, 134, 299.  
Southern Counties Veterinary Medical Association, 55, 98, 280.  
Western Counties Veterinary Medical Association, 33, 445.  
West of Scotland Veterinary Medical Association, 129.  
Yorkshire Veterinary Medical Society, 291, 462.  
Purpura Hæmorrhagica in the Horse, 413.  
Quittor, 298.  
Rabies, 389.  
Rabies and Hydrophobia, 352.  
Rabies and Hydrophobia, Extinction of, 157.  
Rabies in Dogs, Report of Committee House of Lords, 161.  
Rabies in Deer, 388.  
Red Water, 275.  
REVIEWS:—  
Bench Book for Test-Tube Work in Chemistry. H. T. Lilley, 436.  
Equine Diseases of India. R. W. Burke, 430.  
Horse in Sickness and How to Treat him. J. Cockram, 430.  
Inoculation for Rabies and Hydrophobia. C. A. Gordon, M.D., 429.  
Lectures on Medical Pathology. H. G. Sutton, M.B., F.R.C.P., 65.  
Liver Fluke and Rot in Sheep. E. Halse, A.R.S.M., 65.  
Manual of Veterinary Hygiene. Fred Smith, M.R.C.V.S., Army Veterinary Department.  
Stable Management and a few of the Diseases of Horses in India. W. S. Adams, 436.  
Rinderpest Micro-Organisms, Study of, 93.  
Relations of Veterinary to Sanitary Science, 424.  
Report of Committee of Enquiry into M. Pasteur's Treatment of Hydrophobia, 82.  
Rheumatic Endo-carditis, 156.  
Rivolta, S. Nephritis caused by Bacillus, 422.  
"Roaring," Etiology of, 157.  
Robinson, A. E. G. United Eyelids at Birth, 75.  
Robinson, A. Relations of Veterinary to Sanitary Science, 424.  
Royal Agricultural Society, 61, 223, 453.  
Royal College of Veterinary Surgeons, 24, 94, 167, 267, 366.  
Royal Counties Veterinary Medical Association, 208.  
Royal Veterinary College, 372.  
Sanitary Science, Relations of, to Veterinary, 424.  
Saweljew, Prof. Study of Micro-Organisms in Rinderpest, 93.  
Scarlatina derived from the Cow? Is Human, 15.



- Science, Some First Principles of, 259.  
 Schirrous Cord, 154.  
 Scottish Metropolitan Veterinary Medical Society, 28, 134, 299.  
 Seytter, E. W. The Horse, 250.  
 Sheather, C. Diagnosis of Thrombus, 234.  
 Sheather, C. Uterine Hernia, 233.  
 Shoulder in the Horse, Dislocation of, 11, 238.  
 Side-Bones, Operation for, 393.  
 Smith, Fred. Chemistry of the Blood in Purpura, 73.  
 Smith, Fred. Chemistry of the Hoof of the Horse, 313.  
 Smith, Fred. Excretion of Urea, 153.  
 Smith, Fred. Side-Bones, Operation for, 393.  
 Smith, Noble. Dislocation of the Shoulder in Horse, 11.  
 Social Status and Professional Etiquette, 71.  
 Southern Counties Veterinary Medical Association, 55, 98, 280.  
 Spooner, Hart R. Laryngismus Paralyticus, 3.  
 Spratt's Food, 470.  
 "Surra," or Progressive Pernicious Anæmia, 5.  
 Swine Fever, 249.  
 Swine Fever and Hog Cholera, 306.  
 Swine Fever in Denmark, 470.  
 Tail, Paralysis of, from Fracture, 399.  
 Tanacetic Rabies, 469.  
 Tetanus, Micro-Organism of, 423.  
 Therapeutics, 69.  
 Therapeutics, Experimental, 309.  
 Thrombus, Diagnosis of, 234.  
 Thrush, Favus, and Herpes, Organisms of, 23.  
 Traumatic Pericarditis, 339, 398.  
 Trichinæ in Pork, 141.  
 Tuberculosis and Struma, 443.  
 Tubercular Matter, Virulence of, 355.  
 United Eyelids at Birth, 75.  
 Urea, Excretion of, 153.  
 Uterine Hernia in a Terrier, 233.  
 Vaerst, Dr. G. Etiology of "Roaring," 157.  
 Veterinary Council of France, 388.  
 Veterinary Education, 246, 391.  
 Veterinary Education and Examinations, 311.  
 Veterinary Ethics, 292.  
 Veterinary Honours, 23.  
 Veterinary Profession, 468.  
 Veterinary Profession, Justice to, 227.  
 Veterinary Surgeons in the Russian Army, 304.  
 Veterinary Surgeons, Warning to, 388.  
 Wilkie, H. C. Chorea, 340.  
 Wilson, S. M. An Interesting Case, 341.  
 Wilson, S. M. Paralysis of Tail from Fracture, 399.  
 Western Counties Veterinary Medical Association, 33, 445.  
 West of Scotland Veterinary Medical Association, 129.  
 Wiltshire, S. Outbreak of Anthrax in Natal, 327.  
 Yorkshire Veterinary Medical Society, 291, 462.







# THE VETERINARY JOURNAL

AND

## Annals of Comparative Pathology.

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JULY, 1887.

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### NOTE ON PURPURA HÆMORRHAGICA.

BY PROFESSOR LIMONT, GLASGOW VETERINARY COLLEGE.

WITHIN the last year or two I have seen three thoroughly well-marked cases of Purpura Hæmorrhagica in the horse, and in all three cases I have examined the blood of the living animals in search of organisms. In No. 1, I *once* took by puncture (with ordinary precautions against contamination from the skin) blood, or rather exudate, from a swollen part; and at the same time blood from a part not swollen. In No. 2, I *twice*, with an interval of a day or two, took blood in the same way from a part not swollen. In No. 3, I *thrice* took blood at intervals of a day or two—the first time by puncture from a swollen part, the second time in the same way from a part not swollen, and the third time by tapping the jugular vein with a purified hollow needle taken from the little syringe used for subcutaneous injection in human practice. This needle method answered well in the case of the horse, but Mr. Dawson and I afterwards ignominiously failed when we tried to tackle a bull-calf. Of course the needle was first well tested, and then carefully used.

Every slide made from these specimens showed countless *cocci*—minute, spherical or nearly spherical, generally single or in pairs. They were stained by all the aniline dyes used, but were, perhaps, best shown by the Gram method:—Cocci red (rosaniline hydrochloride) against leucocytes stained blue or green. As to their nature, cocci or coccus forms may be “micrococci,” or “bacteria,” or “bacilli,” according to the classification of Cohn. I have seen nothing to lead me to think that they may not be all, or *nearly all* “micrococci,” and in some slides (including one at least of the four made from the blood of the jugular vein), a  $\frac{1}{12}$ th oil-immersion seemed to bring out capsules around some of them.



I cannot say much about the tissues. In No. 1 case I arrived at the stable soon after the death of the animal, but had only time to cut out bits of the greatly swollen lip and eyelid. These were at once put into spirit and hardened. Sections of both, stained with anilines after the Gram method, show veins crammed with leucocytes, plenty of migrant leucocytes, and at least (and undoubtedly) three kinds of organisms. These are, (1) *Minute cocci*, apparently the same as those in the blood drawn from the living animal; (2) *Large cocci* (*Streptococcus pyogenes*?), single, in pairs, or in rather long chains; (3) *Rods* of various lengths, but always slender, sometimes in pairs united at an angle. These beautiful "bacilli" can be seen in the lumen of rather large vessels, in their walls, and altogether outside in the connective tissue. In cases No. 2 and No. 3 I had no opportunity of examining the tissues. The former died on a hot autumn day devoted to a serious operation upon my brother. The latter recovered. On one occasion I saw this animal vomit liquid about a dozen times within a few minutes. The vomit was ejected by the nose, except once, when a little came by the mouth. It seemed to be easily driven up by contraction of the stomach alone, or perhaps of the stomach and diaphragm. On that evening his legs and belly were much swollen, and there was a good deal of rumbling and gurgling going on inside. My colleague, Professor McQueen, aptly likened the vomiting to "water-brash" in man. As I have said, the horse recovered.

Little can be inferred from these microscopical observations, except that Purpura Hæmorrhagica is worth looking into. Its etiology can hardly be worked out except by the staff of a modern bacteriological laboratory, working with skilled veterinary aid in the clinical part of the work. I lay emphasis on the latter, and not without reason in view of the weak points in some recent researches.

As regards the tissues examined. They were of course unhealthy, and lying below unhealthy mucous membranes. Granted that a specific organism started their unhealthy condition; later, indifferent organisms would be pretty sure to penetrate. As a matter of fact, I find at least three kinds, and can say nothing about the rôle of any of them. As regards the blood—to simplify things, say the unmixed blood got from the jugular vein. Granted that a specific organism started its unhealthy condition, and granted that there is only one kind in it, it does not follow that this one is the specific organism. The specific organism, if it ever existed in the blood, may have disappeared from it to give place to an indifferent organism that invades the blood made unhealthy by the specific or pathogenic organism. In the *British Medical Journal* of June 11



there is the report of the Edinburgh investigation into the etiology of Scarlet Fever, an article of considerable interest to the veterinary profession. It is worth reading, if only to show how an apparently specific organism may disappear from the blood, leaving it a fitting *habitat* for another, and perhaps indifferent, organism. And again, it is well enough known that more than one organism may exist in the blood, as well as in the tissues.

It is possible that the blood in Purpura Hæmorrhagica is made unhealthy, and a *habitat* for indifferent organisms, by chemical poisons from without or within. But I strongly suspect that this disease will yet suffer the fate of Tubercle and Anthrax and many another. It may turn out to be a well-known disease in some other animal.

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## ON THE THEORY OF LARYNGISMUS PARALYTICUS.

BY R. SPOONER HART, M.R.C.V.S., CALCUTTA.

*Apropos* of the editorial in the VETERINARY JOURNAL for April last upon "Ormonde" and his having turned roarer, and the theory as to its cause, I beg to be permitted to express my view upon the subject, and one which I have held since 1870. It is that Roaring (*Laryngismus paralyticus*) is the result, in the majority of cases, of exalted body temperature, such as occurs in the hunter and race-horse during training and galloping, and in the class of cases known as Thermic Fever, or so-called *coup de soleil*, in which the temperature often runs so high that the ordinary thermometer is useless to register it. Laryngismus paralyticus and paralysis behind, or "gone in the loins," are the common *sequelæ* of such attacks. In training, the horse is galloped day after day in heavy clothing and sweated, and as he strides along the current of air cannot play on his skin, the body temperature is shut in, and so accumulating runs very high. This, repeated time after time, damages the nervous system. The heat-governors, or centres wherein lie the temperature-controlling power, become damaged and weakened, and consequently the temperature of the body rises higher than it would do if this damage did not exist. This high temperature is paralysing in its effects. Let us take a case of Thermic Fever, or so-called sunstroke in the horse. Patient lying in a semi-unconscious state, temperature 108 or '9, put under the cold douche, ice rubbed over the body and applied to the head, thermantidote set going. Temperature, after a time, begins to fall. Sensibility returns; patient struggles to get up, but cannot without assistance, and then has to be supported; paralysed behind, he cannot walk; the quarters roll from side to side, and it is not until some time after the temperature returns to its normal



standard that he regains the use of the hind parts, or the paralysis may permanently remain.

I repeat, Roaring and "gone in the loins" are the common results of such attacks, and should the animal immediately after not give evident signs of Roaring or loin weakness, sooner or later the one or the other (or both) will manifest itself. A patient, after an attack of such high fever, is left with his nervous system permanently damaged, and is never a horse again. The least exposure and work in the sun, his body temperature runs up like a thermometer when exposed to the sun, and he quickly falls if not taken to the shade. A certain train of symptoms remain after these attacks, and the initiated quickly recognise them. Roaring is very common in Calcutta, and here it affects the coarse and well-bred—perhaps the former more than the latter; not the result of fast work, but because his organisation cannot stand the heat. His body temperature, even when at rest, stands abnormally high, and on the smallest exertion in the sun, his body temperature rises up quickly. He never cools down, and stands and blows over his food in the stable; he is in a chronic state of fever. Very little work in the sun and he falls, registering a very high temperature. A horse of this class becomes a Roarer, and is of very little use here; it is the well-bred horse that stands our climate best.

There is another form of neurotic affection of the larynx met with here, and which corresponds with *Laryngismus stridulus* of the human subject; it was very common some years ago, but I have not seen a case for some time. In these attacks, to all intents and purposes, the subjects of them, in most instances, appear in good health, when, suddenly, the breathing becomes quickened and difficult, and, so increasing, goes on until the membranes become black, face deathly, cold perspirations pouring off the body, staggering, and when death looks imminent from asphyxia, relief comes, and gradually the dyspnœa passes off, and after a time the breathing becomes tranquil, and the subject remains all right till the next attack. The symptoms and character of *Laryngismus stridulus* in the human subject are precisely similar to this spasmodic form of Roaring in the horse, and the description given of the former in medical works will correctly convey to the reader the symptoms of the disease in the horse.

I very much regret that time will not permit my going fully into the subject, and to cite cases from my numerous records in support of the theory I have advanced.

In conclusion, I trust these few lines may be of some value, seeing that they throw light upon the causes of two obscure affections, namely, Roaring and "gone in the loins."



## “SURRA,” OR PROGRESSIVE PERNICIOUS ANÆMIA.

BY R. W. BURKE, M.R.C.V.S., ARMY VETERINARY DEPARTMENT,  
JUBBULPORE, INDIA.

AMONG the most important diseases in medicine are the so-called constitutional blood-disorders: Anæmia, Chlorosis, Leukæmia, and Pseudo-leukæmia—which are so little understood. Also Pernicious Anæmia, the etiology of which is still obscure. Since its discovery by Addison in 1835, and the early observations of Biermers in 1868-1872, a very great deal of information regarding its general features has been made out, but chiefly through the observations of Quinke, Eichhorst, Zenker, Immermann, Ponfick, and others. We may explain, very briefly, our present amount of knowledge with respect to its etiology, symptomatology, and *post-mortem* appearances, considered generally and specially. We recognise, in the human subject, principally two forms of Pernicious Anæmia; idiopathic or essential, and symptomatic.

The causes of the first form, which is the essential disease, are altogether unknown. In general, bad feeding and stabling, and non-hygienic conditions are the usually received causes; and, owing to this, we consider it an “infectious disease”; or it may be regarded as a constitutional disease of the blood, and of the red bone-marrow. All the cases which have come under observation have hitherto proved incurable.

The causes of the second form are better known. This form is caused by a certain blood-sucking intestinal worm, principally the the *Ankylostomum (Dochmius) duodenale* and *Botriocephalus latus*. This was first pointed out by Perroncito, in 1880, to be the cause of progressive Pernicious Anæmia among workmen and others. This form of Anæmia is to an extent curable. The disease was described for the first time in India under the name of “*Surra*” as occurring commonly in horses, mules, and camels, by Inspecting Veterinary Surgeon G. Evans, M.D., of the Army Veterinary Department, who noted the presence of a parasite in all the diseased animals examined, and in others subjected to experimental inoculations. The nature of the parasite, and its exact pathological significance, are points which Dr. Evans did not satisfactorily clear up; although the suggestion subsequently made by Veterinary Surgeon Steel, that it was a spirillum, would not be accepted by him, who maintained that, whatever it might be, it was not a member of the family of bacteria. Dr. Edgar M. Crookshank (*Journ. Micr. Soc., Ser. 2, Vol. VI, 1886*), who carefully studied the parasite in “*Surra*” blood, agrees with Dr. Evans in considering it to be *not* a spirillum, and proposes to name it after its discoverer, *trichomonas Evansi*. Professor Osler terms it *hæmato-*



*monas Evansi*. (*Brit. Med. Journ.*, 12th March, 1887). But the relation of this parasite to the disease has remained an unsettled question. I may add that parasites were discovered in perfectly normal blood, and many years ago. I will mention the names of a few observers only, namely, Delafond and Gruby (*Recueil de Med. Veterinaire*, 1843, 1844, 1851), Serres (*Journal du Midi*, 1854), Krabbe (*Repertorium der Thierheilkunde*, 1871), De Silvestri (*Il Med. Veterinario*, 1871), and, three years later, Lewis (*The Pathological Significance of Nematode Hæmatozoa*, 1874). Some interesting papers may be consulted on this subject also in *Giornale di Pisa*, 1877, and in the *Deutsche Zeitschrift für Thiermedizin u. vergl. Pathologie*, 1882, and elsewhere.\*

The remarkable tendency of the blood to harbour parasites has been a matter of not recent observation. Their characteristic features manifest a disposition to augment in numbers under any shock or depression of the system. Sometimes, prolonged exposure to malarious and ill-sanitary influence, debilitating effects from impaired nutrition, from hyperpyrexia, etc., issues in a morbid alteration of the blood peculiarly fitted for the growth and multiplication of these organisms; but, even when no change in the surroundings of the animal is discoverable, a deep impression is often stamped upon the system, leading to their increase. In a recent inquiry it has been shown that these organisms are to be found in no less than 25 per cent. of apparently healthy animals.

These parasites are usually classed as filaria, and they do not seem to excite any disease when in moderate numbers. In other cases, Apoplexy may result from embolism of the heart and closure of the valves; and also the embryos appear to cause Apoplexy by blocking up the capillaries of the brain. Besides this they may cause epileptiform convulsions and Anæmia and wasting; also hæmorrhages into the lungs and skin, and varied symptoms.

In all kinds of animals, then, this parasite must exist, ready to resume its active form whenever the conditions of climate, of weakness, and ill-health present themselves afresh. Without doubt, the parasites which are the cause of this disease are widely prevalent, and exist in the blood of most animals, but attenuated; and in this state an animal may harbour them in its blood, without showing much, if any illness. They only become dangerous when, through over-crowding and other causes, in bodies enfeebled by disease, their virulence becomes exaggerated. Under weakened states of the body, as in "Surra," doubtless the parasites multiply rapidly, and even assume pathogenic properties. See, in this connection, a remarkable case of "Filaria Immitis in the Heart of a Dog," in

\* See a paper on this subject entitled "Parasites in Normal Blood," in the VETERINARY JOURNAL for January, 1887.



the VETERINARY JOURNAL, December, 1881. We have here a case where the parasites *became* pathogenic, and too much stress must not be laid on the pathogenic properties of the somewhat similar organisms found in “Surra.” There is strong evidence in favour of the belief that the parasites assume pathogenic properties under favourable conditions; but it should also be stated that the parasite in “Surra” has never been isolated apart from the blood, and the disease then produced by inoculating healthy animals with it. It is most probable, therefore, that the parasites in “Surra” are only associated with the disease, the impoverished blood affording a suitable nidus for their development.

*Pathology.*—Zschokke first described this disease in the *Schweizer Archiv für Thierheilkunde*, Bd. 25, 1885, under the name of Pernicious Anæmia of the horse, and also noted the presence of spiral organisms in the blood, the same as those observed by Klebs and Frankenhauser in the human subject. The presence of these organisms, he considers, accounts for the infectiousness of the disease. Fröhner also saw organisms in the blood of the horse between the red corpuscles: they were from  $\frac{1}{3}$  to  $\frac{1}{2}$  the size of a red blood corpuscle, but were not quite so thick. Fröhner found them usually grouped together in fours and sixes (*Archiv für Wissen und Praktische Thierheilkunde*, Band XII, 5 u. 6 Heft, 1886). M. Netter shows that the parasites pass up the bile ducts, penetrate their coats, and thence pass into the blood (*Archives de Medicine*, 1884). The common people in Germany believe this disease to be in some way connected with a non-hygienic state of the stables. Veterinary surgeons of the army, on the continent of Europe, have generally described it under the head of lung disorders of an infectious type. Until my own observations were published (*Supplement to Report on Remittent Anthrax*, 5th March, 1887), veterinarians in India have treated of it under different names, as “Surra,” Relapsing Fever, etc., according as it suited the fancy of different writers.

Other animals, besides the horse, have been known to suffer from the disease. Mégnin describes a symptomatic type of this disease seen in dogs and cats, which was caused by an ankylostome producing Anæmia, and which is, without doubt, similar disease to the symptomatic form of Anæmia in man. Johnne saw this disease in the dog as a secondary affection following a suppurative form of disease. Imminger has observed enzootic outbreaks of it in cattle. Fröhner describes having only recently seen cases of this disease in the horse, and Friedberger also saw an outbreak of it in the same animal. The cases described by Dieckerhoff, under the name of “Scalma,” are undoubtedly the same disease. The latter author mentions nine cases which, although of a milder



nature, showed symptoms allied to those of Pernicious Anæmia. Dieckerhoff considered it infectious.

*Etiology.*—Dr. Ponfick's experiments show that Pernicious Anæmia may be experimentally produced in dogs and rabbits by administering blood-dissolving agents to them for some weeks, but especially glycerine, pyrogallic acid, etc., which always produced a state of lethargy and extreme weakness in these animals, the mucous membranes becoming pale and anæmic, the action of the heart very irregular, with blowing sounds heard on auscultation of the latter organ, the pulse also weak, and the temperature raised. The excrements were sometimes mixed with blood. A microscopic examination of the blood showed a pretty normal condition of things in the first week; from the third to the fourth week the blood became pale and watery, with an excess of white cells in it. On dissection of the body, marked Anæmia was found, with fatty degeneration of the muscles of the heart, of the intima of the veins, the liver, and kidneys; and blood-vascular extravasations in internal organs, but principally in serous membranes, in the lungs, the brain, the spinal marrow, subcutis, etc.

Professor Ponfick thinks that the blood-dissolving agents cause separation of the hæmoglobin from the red blood-corpuscles, leading to marked disturbances in the relative proportion of the blood constituents. The leucocytosis, which is a marked feature of Pernicious Anæmia, is also characteristic of Hæmoglobinuria, and which in acute and subacute cases is always present. An excess of free hæmoglobin in the spleen, liver, and kidneys may probably be a cause of swelling of these organs seen in this disease. The continued loss of hæmoglobin from the blood interferes with the formation of new blood in a very serious manner. The author has proved by further examinations that free hæmoglobin in the blood destroys the white cells and promotes the growth of fibrin ferments. Large quantities of these ferments cause a marked disturbance of the circulation, the blood flows slower than under normal conditions, which necessarily interferes with the proper function of the blood-forming organs. The body becomes poorer and poorer through the large numbers of the red blood-corpuscles becoming destroyed in this disease, and through loss of hæmoglobin and oxygen: which cause defective nutrition leading to excessive deposition of fat in the principal organs of the body, and which is the cause again of hæmorrhages in different organs (*Berliner Klinischen Wochenschrift*, *Nors.* 29 and 30, 1886).

One cannot refrain from pointing out the very meagre evidence we possess, in the face of these experiments, with regard to the share taken by the parasites met with in the blood of Surra. The



results of these experiments at once suggest to our mind an explanation with regard to the numerical increase of the parasites as a consequence of impoverished blood in this disease.

Dr. Crookshank states that the closest examination has confirmed his belief “that the parasites found in the blood of healthy rats are morphologically identical with the stained parasites of *Surra*.” Dr. Evans noted the presence of filaria of different species in the blood of diseased as well as healthy camels (*VETERINARY JOURNAL*, *July*, 1881, *p.* 10), and Crookshank notes the same fact in the case of filaria found in the blood of rats. Since all observations prove the existence of filaria of different species in the blood to be compatible with health, we have no reason for wonder when we find them greatly increased during disease.

It should be further stated, as Dr. Crookshank points out, that the organism has never been isolated apart from the blood in *Surra*, and the disease then produced by inoculation of healthy animals—a point of considerable moment in the etiology of this disease.

*Symptoms*.—The appearances during life are principally those of a general loss of blood, indicated by Anæmia of mucous membranes, languor, dyspnœa, a weak and readily excitable pulse, palpitation of the heart, and fever. There is increasing debility, with little or no loss of appetite. In spite of a greedy appetite, debility appears, progressive in character. Dropsical swellings usually occur towards the latter stages of the disease. The malady is usually progressive, seldom acute in character. The course is prolonged to several, usually six to eight weeks.

With regard to the fever accompanying this disease, Mr. Steel has noted an unlimited number of remissions on the fourth and fifth days usually, which he mistook for the remissions seen in Relapsing Fever. Zschokke has shown that the fever accompanying these cases is of an intermittent (*quartan*) type. Fröhner has likewise noted a marked rise in temperature on the fourth day, which, with slight remissions, remained high till death. Fröhner also saw partial paralysis, or an increasing weakness of the hinder quarters in horses the subject of this disease, a symptom which was often observed in the Burmah outbreak. Zschokke mentions Jaundice as another frequent symptom in the horse, as well as enlargement of the lymphatic glands and punctiform extravasations—symptoms commonly noted in *Surra* in India. The urine is albuminous in character, and of an acid reaction.

*Post-mortem Appearances*.—On dissection, a general Anæmia, together with fatty metamorphosis, unattended by other changes, is noted. Frequently, though not always, hæmorrhages take place more or less in all the organs, but principally in the serous mem-



branes, the muscles, the retina, and the larger glands. The spleen and liver are sometimes swollen, and contain thrombi in the larger vessels. The marrow in the bones appears altered in character, and presents a jelly-like aspect, containing innumerable granular blood-corpuscles. The liver and other organs contain an excess of iron-salt. The true pathological cause is to be found in the blood; the red blood-corpuscles are decreased in number and altered in shape, size, and aspect, frequently presenting a markedly serrated outline. Nodular blood particles are also to be seen in the blood. In short, the blood is in a state of complete disorganisation.

Zschokke states that none of the principal organs show any marked structural change. Besides Anæmia, he has noted hæmorrhages under the serous membranes, swelling of the liver and spleen, loss of striæ in the muscular fibres of the heart, blood extravasations in the marrow of bones, and a decrease in the number of red corpuscles in the blood, the same as in Pernicious Anæmia in man. He also noted the presence of spiral organisms in the blood.

Mr. Oliphant, Principal Veterinary Surgeon in India, in his D. O. dated 12th February, 1887, writes: "In one outbreak of Surra in the 18th Bengal Cavalry, in which 180 horses died, I made dozens of *post-mortem* examinations, and the appearances in all were identical—extreme pallidity of all the tissues, with perhaps a trifling serous effusion into the abdomen, etc. In fact, the animals looked as if they had been starved to death." Dr. Evans was also most careful in pointing out that absence of any marked structural changes was peculiar of Surra (*VETERINARY JOURNAL*, July, 1881, p. 6). The other symptoms, such as the adipose degeneration of the liver, spleen, heart, and other organs, the general hæmorrhagic diathesis, etc., may be regarded as secondary in origin.

*Diagnosis.*—The marked anæmic conditions, observed both *ante*- and *post-mortem*, the leucocytosis, fatty degeneration of the muscles, liver, spleen, kidneys, and other organs, the general hæmorrhages, and the chronic state of fever, which end in death in so many cases, leave no doubt as to the nature of the disease.

*Treatment.*—In all forms of serious Anæmia, authors have always attached the greatest importance to treatment by arsenic; and in a recent paper by Professor Osler, in the *Therapeutic Gazette*, he states that in all cases of pernicious or essential Anæmia there was no one case of recovery in which arsenic did not form the basis of treatment. It is not, however, a specific. Iron is only occasionally useful in these cases. Mr. Steel also mentions these remedies in the treatment of "Surra," although he met with no greater success



than usually follows their use in Pernicious Anæmia in man. Exercise would appear to be more favourable to recovery in these cases than absolute rest. Change of climate has been found occasionally useful, both in the case of man and in that of the lower animals. And Sir Joseph Fayrer—who even suggests that “beriberi” in man is probably one form of Pernicious Anæmia—thinks that a hilly climate is particularly suitable for the less advanced cases, although he admits its efficacy in more prolonged cases to be somewhat doubtful, if not altogether *nil*.

The whole subject of parasites and parasitism in equine medicine is one which has yet to be studied completely; but, as a clinical observer, I believe that I can recognise in Surra a pathological state which has a curious relation to Pernicious Anæmia in man, which I have endeavoured to bring out in this paper for the benefit of English-speaking veterinarians in India in particular, and to associate it with that disease of the lower animals long since recognised by veterinarians on the Continent of Europe, but especially by Mégnin, Johnes, Imminger, Zschokke, Friedberger, Fröhner, and others.

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## DISLOCATION OF THE SHOULDER IN THE HORSE.

BY NOBLE SMITH, F.R.C.S. ED., LONDON.

I FIND that the account I sent of this case has excited some interest, and, therefore, few further remarks may perhaps be worth recording.

I have heard of several other instances of this accident. In some the horses were shot: in three the dislocation was reduced with much trouble, and the animals were unfit for work for the next six months. I am told that reduction has been effected in some cases by taking the horses into water and making them swim. This, to say the least, is not a very scientific proceeding, and I should think it probable that the displacement must have been but partial, when such a course was practicable. In complete dislocation muscular action could hardly do otherwise than increase the displacement.

I have received a very interesting communication from my friend, Mr. Abraham, lately Member of the Court of Examiners, and Curator of the Museum of the Royal College of Surgeons of Ireland. It is a reprint from a paper which he sent to Transactions of the Academy in Ireland. He refers to several recorded cases of this accident, and to one which occurred in his own experience.



In the latter instance the horse fell against a bank, in a somewhat similar manner as in my own case. "There was little apparent shortening of the limb, very slight turning in of the toe, and the animal seemed able to rest some weight upon the leg." The horse was "fearfully lame." The weight of opinion was that one of the shoulder muscles had been ruptured and that no dislocation existed. A blister was applied, and after a time a leather shield was tightly strapped over the prominence.

The horse died ten weeks after from Tetanus, and at the *post-mortem* examination the humerus was found to be "dislocated upon the dorsum of the scapula, *i.e.*, the head of the bone had been forced outwards and upwards. . . . Rather more than an inch of the outer edge of the glenoid cavity had been broken off and pushed up," and was ankylosed on the neck of the scapula in the line of the spine. The humerus was ankylosed to the scapula in its abnormal position. The horse had travelled three miles to the station and been brought to Dublin before being seen by the veterinary surgeons, and therefore the parts were doubtless much swollen. This fact, coupled with the rarity of the accident, may account for the error in diagnosis.

This history seems to me a valuable support to my contention that when a severe injury has happened no movement of the animal should be allowed before it is scientifically examined, and, in the case of dislocation, reduction effected. The sequel to my case is as follows:—

On the seventeenth day after the accident the mare was put in harness and trotted round Regent's Park. I have used her six days in each week since, and she has gone perfectly sound. Less than six weeks after the accident I rode her across a ditch about six feet wide, and she showed no bad effects after the effort. Once or twice before this jump, and once since, she has made a slight stumble while trotting in the saddle on rough ground.

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## UNUSUAL RESULTS OF CASTRATION.

BY V.S. GERALD H. FENTON, F.R.P.S., ARMY VETERINARY DEPARTMENT, KAMPTEE, INDIA.

FROM the peculiar circumstances which have occurred during the past three months in the cases of some recently castrated horses, I am induced to record the same, never having experienced these conditions in my practice before. These cases happened in the 4th "P.W.O." Madras Light Cavalry, amongst the Persian remounts, 145 of which have been castrated here—an unusually large number for one regiment. I am particularly referring to Laminitis as a peculiar sequel of castration; about twenty-five out of this number, after being castrated from five to ten days, were reported as not being able to take their usual gentle exercise, owing to fever in the feet. These symptoms varied very much in intensity in the different cases—in some instances both fore feet were affected and not the hind; in others one fore, and, in the worst form, all four feet, and to such a degree that the poor animals could not stand up. These symptoms, however, in severest cases did not last more than five days, when the patients were able to resume their exercise. The usual treatment of poultices and wet swabs in the less severe cases was adopted; in the serious cases, when the patients could not stand, in addition to the above treatment, refrigerating lotions of an evaporating nature were applied to the limbs with very much benefit; there were no bad results after these cases.

The next case is one of Peritonitis, which is not at all unusual as an after effect of castration; but in this instance it was surprising, to say the least of it. I herewith quote the case.

*Case 199, D. 26.*—March 2nd, 1887.—Peritonitis. The patient is a remount, and was castrated nine days ago, and progressing most favourably. The animal went through his food the evening previous, and showed no signs or symptoms of sickness of any sort; but at 5.30 a.m. in the morning he laid down, struggled for a few minutes, and died. No treatment. *Post-mortem* revealed most extensive Peritonitis, visceral and parietal, and extending to the pleura in thoracic cavity; there was about one gallon and a half of fluid in the abdominal cavity, which no doubt prevented the usual symptoms of Peritonitis being observed. There was lymphadenoma of the spleen well marked; the right ventricle of the heart was gorged with tar-like blood. Lungs and kidneys healthy. Discharged; died.



The following case, also taken from the record of treatment, is worthy of note, there being no cases of Paralysis, general or local, in the horses of the regiment. At the same time, I do not wish it to be inferred that I am positively stating that the castration had anything to do with it ; but there the fact remains, that the Paralysis appeared without any other traceable cause, and as Paralysis is a nervous affection, there is no reason in my mind why it should not occur, as a sequel, in the same manner as Tetanus, mysterious though it may be.

*Case 225, D. 39.*—March 16th, 1887.—Paralysis, local (labiæ). The patient was recovering from castration, and almost fit to be discharged, when the lips were noticed to be in a pendulous condition, and he was with difficulty able to feed, although appetite very good. Inject Liq. Strychniæ above upper lip, and give Liq. Strychniæ ʒii, Aqua ʒiv, in a draught twice a day, and plenty of sloppy diet.

March 20th.—The lips are more pendulent, and the patient is quite unable to feed without assistance, the food being put into his mouth ; he seems much distressed. Continue the draught, and assist the animal as much as possible by continual small feeds.

March 25th.—No improvement, and the animal is getting weaker and weaker. Try the galvanic battery three or four times a day locally.

March 27th.—Treatment of no avail. Patient rapidly losing flesh. Give tonics and stimulants three times a day.

April 1st.—The patient weaker. Prognosis unfavourable ; continue treatment.

April 11th.—Worse. All the tonic, stimulant, and nursing treatment of no avail ; can do no more. Apply for a special casting committee to have him destroyed.

April 12th.—The patient died before the committee was convened. *Post-mortem* revealed all organs healthy, but very anæmic. Discharged ; died.

I shall feel much indebted to the editor if he will kindly favour me with his valued opinion as regards the Laminitis portion of the paper, as I should like to know whether this condition after castration is as uncommon as I take it to be.

[Laminitis is an unusual sequel of castration.—ED. *V. J.*]

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## Editorial.

### IS HUMAN SCARLATINA DERIVED FROM THE COW?

THE recently published investigations of Dr. Klein would make it appear that human Scarlatina is derived from bovines, which, through the medium of their milk, convey the contagion to mankind, this being developed in an eruption on the udder and teats, and therefrom finding its way in the process of milking into the lacteal fluid. The announcement of this discovery has, as might be expected, caused great consternation and alarm in the public mind, and created something like a panic in the milk-producing industry. In this journal we have at various times given notices of Klein's researches, and we now publish an inquiry by Professor Axe into the outbreak of disease among cows at Hendon, which, it is stated, originated the epidemic of Scarlatina among those who partook of their milk.

We have no desire whatever to throw discredit or doubt on Dr. Klein's work, but accept all his facts as facts. In presence, however, of such a revelation, it is desirable to proceed with the utmost care and exactitude. To insist that there is no safety in using cows' milk as food unless it is previously boiled is calculated to frighten people, and to deter them from using a most important, indeed essential, article of diet, while it must greatly prejudice a great industry.

Already, the extensive prevalence of Tuberculosis in cattle, and the experimental evidence of its transmissibility from them to other animals, not only by inoculating these with infective material, but by feeding them with flesh and milk from diseased beasts, has caused grave suspicion that mankind may suffer from the ingestion of such products; and now we have a most fatal and prevalent human disease traced to the cow, and what constitutes a large portion, if not the entire sustenance, of young children, considered highly dangerous for that reason.

Dr. Klein's experimental proofs are apparently sound, so far as they go, but it may be questioned whether they go far enough. We cannot experiment on our fellow-creatures in order to ascertain, in a positive and undeniable manner, whether an eruptive disease of the cow will produce Scarlatina; but in order to prove the identity of Scarlatina and the bovine malady—a most important point—we can try to transmit the human disease to the cow. This Dr. Klein has done, so far as we can learn, only in a few cases, but it should be attempted on a larger scale without delay, as upon its success or failure will depend the complete solution of a most pressing hygienic and pathological question.

The danger of jumping to conclusions is sufficiently obvious from what has already occurred in researches of this kind. To go no further than the question of identity of Small-pox and Cow-pox. It is almost universally accepted by medical men that the latter disease is merely Small-pox modified by transference to the cow. But no one ventures now-a-days to demonstrate this, nor can any evidence be adduced of Cow-pox ever again becoming Small-pox when re-transferred to man, which



it would, if the two maladies were due to the same organism or infecting principle.

Eruptions on the udder of the cow have long been observed, as they are common, and have always been considered benign and unimportant; certainly they have never been suspected of producing serious disease in our own species, and if they could give rise to Scarlatina that scourge must be much more widespread than it is even now.

Without prejudicing Klein's work, we must express the opinion that much has yet to be done before we can accept his conclusions as thoroughly established.

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### OBSERVATIONS ON MILK SCARLATINA.

THE subject of human Scarlatina, produced by a disease of cows, was alluded to in the last issue of the VETERINARY JOURNAL, by the publication of a paper read by Dr. Klein before the Royal Society; and as the discovery has caused much alarm, the Privy Council instituted an inquiry into the circumstances attending the origin of the outbreak. The following report by Professor Axe, with introductory remarks by Professor Brown, will be read with interest; though it is to be regretted that the origin of the malady is still undecided.

TO THE LORDS OF HER MAJESTY'S MOST HONOURABLE PRIVY COUNCIL.

MY LORDS,—In submitting the following report by Professor Axe for your lordships' consideration it is necessary to refer to the circumstances which led to the inquiry as to the connection between human Scarlatina and a certain eruptive disease of the udder and teats of the cow.

In December, 1885, an outbreak of Scarlet Fever in Marylebone, which was associated with the distribution of milk by a particular dealer, was investigated by the Local Government Board. Mr. Power, who was instructed to conduct the investigation, came to the conclusion, on what appears to be unquestionable evidence, that the outbreaks in Marylebone and other districts were traceable to milk obtained from a dairy farm at Hendon. Mr. Power was on further inquiry led to believe that the infection of the milk was not due to the introduction of infective matter from human Scarlatina, but to a diseased condition of certain milch cows at the farm, the disease having been introduced in the previous month by some animals newly arrived from Derbyshire; the evidence on which this conclusion was based is set forth at length in the Fifteenth Annual Report of the Local Government Board, 1885-86. In the same report, Dr. Klein gives an account of his investigation into the intimate nature of the ailment present among the Hendon cows; the result of the inquiry may be summarised in the words of the Medical Officer of the Local Government Board. By the inoculation into calves, either directly of the discharges from cow-ulcers or indirectly of sub-cultures artificially prepared, of the micro-organisms contained in those discharges, Dr. Klein has succeeded in producing, now local, now general, disease in the calf; disease having unmistakable affinities in its local phenomena with the Hendon cow disease, in its constitutional manifestations with Scarlatina in the human subject.

Since then Dr. Klein has ascertained that a micrococcus exists in the blood of human Scarlatina identical in morphological and cultural respects with the organism obtained from the Hendon cows; and further, that the introduction of this organism from the human subject into the system of the calf, either by inoculation or feeding, causes disease identical with that which



was last year produced in the calves which had been infected with matter from the Hendon cows.

Immediately after Mr. Power's report was laid before the Privy Council the Lord President directed that the matter should be investigated by the Agricultural Department, and subsequently the Royal Agricultural Society of England urged upon the Privy Council the importance of endeavouring to ascertain the truth, or otherwise, of the allegation that contagious diseases of the human subject, such as Scarlet Fever and Diphtheria, might arise from the consumption of the milk of cows affected with an eruptive disease of the udder and teats. The inquiry was commenced immediately, but owing to the alarm which was occasioned among dairy farmers by the publication of the report of the Local Government Board, it was found impossible to obtain any information from dairy farmers of the existence of the disease among their herds, although it is known to be extremely common among newly-calved cows.

Professor Axe's report is an important contribution to the history of the Hendon cow disease, because it deals especially with the identical malady among the herd of Derby cows, three of which introduced the disease into the Hendon dairy, while other parts of the herd were sent to different dairies in the country, carrying with them the affection which they communicated to cows with which they were brought in contact.

The evidence on both sides of the question may be thus stated: Professor Axe observes in his report that the cows in five dairies were infected with the eruptive disease of the udder and teats by the agency of the Derby cows. But in only one instance did Scarlatina result from the distribution of the milk. The evidence adduced by the Local Government Board in favour of the allegations that Scarlatina was the direct result of the cow disease is, first, that no other cause of infection of the milk was discovered after the closest inquiry; and, secondly, that inoculation of calves with the virus of the cow disease and the virus of Scarlatina produced morbid conditions which are identical with those of Scarlatina of man, and with the disease of the cow. The last link in the chain of the argument, viz., proof that inoculation with the matter from the ulcers of the cow disease will produce human Scarlatina is wanting.—I am, my Lords, your Lordships' obedient servant,

G. T. BROWN.

Agricultural Department, Privy Council Office,  
May, 1887.

*Report on a Disease in Cows in its relation to the Scarlatina Epidemic in the North-West District of London, December, 1885, by J. Wortley Axe, Professor of Pathology at the Royal Veterinary College, Consulting Veterinary Surgeon to the British Dairy Farmers' Association.*

Milk in relation to public health has received a considerable amount of attention during the past twenty years, not only from the officials of the Medical Department of the Local Government Board, but also from human and veterinary medical practitioners and sanitary officers throughout the country.

From time to time, and with ever-increasing frequency, the most disquieting and even alarming circumstances have arisen in connection with the milk supply of our large populous centres, and inquiry has again and again revealed the fact that as a medium for the dissemination of contagious fevers milk stands conspicuously forward as the most likely vehicle. Diphtheria, Scarlatina, and Enteric Fever—the most common of infectious ailments—owe a large measure of their prevalence and mortality to the traffic in specifically infected milk; and I have elsewhere shown that some, at least, of the contagious fevers of bovines are probably capable of being transmitted to man



through the agency of this fluid. Foot-and-mouth Disease, and that more fatal malady, Tuberculosis, are apparently communicable from the lower to the higher animal; and it is a notable feature in the interchange of all these spreading disorders that whether existing in one creature or the other their clinical and pathological characters remain the same, and the contagia out of which they arise are incapable of inducing any other disorders than those which gave them birth. As the parent so the offspring is as true of each of the specific contagious fevers as it is of each variety of our dogs or horses. Whenever, therefore, any signal departure from this universally recognised principle is suggested by scientific men, especially as affecting our food supply, the question naturally invites attention from all concerned in guarding "Public Health."

Mr. W. H. Power having reported\* to the Medical Department of the Local Government Board that a certain eruptive disease of the cow had proved capable of developing the virus of Scarlatina of man, the subject was deemed of sufficient importance to call for a special and independent inquiry.

Accordingly I received instructions from Professor Brown to inquire into the circumstances of the herd of cows referred to in Mr. Power's report, and to learn, as far as possible, the relation, if any, which existed between a certain eruption from which they suffered and the Scarlatina outbreak to which it is said to have given rise.

In order to render the inquiry as intelligible as possible, it will be necessary to relate some of the more salient facts and conclusions arrived at by Mr. Power in his report to the Local Government Board. They are as follows: On the 18th of December, 1885, Mr. Wynter Blyth, Medical Officer of Health of St. Marylebone, reported to the Board an outbreak of Scarlatina in the parish of St. Marylebone, and simultaneously at Hampstead, St. Pancras, St. John's Wood, and Hendon. The epidemic commenced about the latter part of November or the beginning of December, and on inquiry being made it was found to have arisen from the distribution of specifically infected milk derived from a dairy farm at Hendon. This conclusion appears to have been fully established by considerations of the relation of the epidemic to the particular milk supply. In this connection it was found that all the invaded families had obtained their milk from the suspected dairy, and that this constituted the only connecting link or circumstance in common between the several households. It was further remarked, in support of the same conclusion, that the Fever did not prevail in families who procured their milk from other dairies. In seeking to explain the source of contamination of this Hendon milk, the conclusions arrived at by Mr. Power were:—1. "That the milk had not acquired the ability to cause Scarlatina in any commonly accepted way, such as through unwholesome conditions of water or drainage, or through careless handling of milk or milk utensils by persons carrying Scarlatina infection." 2. That the eruptive disease from which the cows were found to suffer proved competent to produce Scarlatina among human consumers of the milk, and that to it, and it alone, the epidemic in question owed its origin and propagation.

Leaving the possible sources of infection of the milk by human agency, I pass on to consider the history of the cows out of whose ailment this specific fever of man is said to have arisen, and of other cows similarly and simultaneously afflicted.

It may here be remarked that the incriminated milk was supplied from a dairy farm in the occupation of the late Mr. Panter, of Hendon. One hundred cows were engaged in the business, and it was the practice in recruiting the dairy stock to purchase newly-calved cows from the country as occasion required, and to dispose of the stale ones as they dried off.

\* Medical Report to Local Government Board, 1886.



The last occasion preceding the Scarlatina outbreak in London, when fresh stock was brought upon the Hendon farm, was on the 15th of November, 1885. On that day three cows from Derby were purchased by Mr. K., a dealer. In replenishing his herd it was Mr. Panter's custom to submit all newly-purchased cows to a period of quarantine, in order to guard against the introduction of contagious animal disorders into the general herd.

The usual term of isolation was seven days, but sometimes, as in the case of the three animals in question, the period was prolonged to ten or fourteen days, as might be deemed necessary.

At the time of being sold to Mr. Panter, the three Derby cows were in good general health, but one of them had upon her teats a slight eruption.

Several others in the dealer's stock were suffering at the same time from the same affection, and in a few days all three of the cows purchased by Mr. Panter had contracted the disease. Later on they were removed from the quarantine shed and placed in standings among the general herd. After the lapse of a few days, the malady was noticed to spread from cow to cow, until nearly the whole of the herd had been brought under its influence.

To the herdsman and dairy farmer this eruption on the teats was quite familiar, and was recognised by them and by other dairy farmers of large experience as a common cow disease, which they had been accustomed to speak of as Cow-pox, and to disregard, except that additional care in milking was rendered necessary by the soreness of the teats and the spreading nature of the affection.

In no case, however, had they known epidemic fevers to occur in persons drinking the milk of cows so affected.

They urged, and with much force of reason, that had a malady so common in their experience possessed the property of communicating Scarlatina, the fact would on some occasion in the course of numerous outbreaks have been brought under their notice.

It was stated by one practically acquainted with the common ailments of cow stock that the form of eruption exhibited by the Derby cows, and by those infected from them, was seldom absent from the cattle markets of our large dairy districts.

During the prevalence of the disease at Hendon, I was deputed by the British Dairy Farmers' Association to visit Barnes farm, and inquire into the nature of the malady. On my arrival there the eruption on the teats and udder, which was the characteristic feature of the complaint, had in the majority of cases altogether disappeared; but in some instances there still remained such indications of the disorder as marked its declining stages. From what I then saw, added to information obtained from the farmer and his herdsman, as well as from other dairymen, to whose herds the disease spread, I am able to record the main features of the malady as they occurred in the course of the outbreaks.

The disease is essentially an eruptive one, and with few exceptions confined to the teats. Occasionally it extends to the udder, and in some exceptional cases it is stated to have been associated with a scaliness and thickening of the skin about the quarters, and with loss of hair in scattered patches.

The first indication of the malady is shown by redness and tumefaction of the teat, which soon becomes tense and painful to the touch. In from twelve to twenty-four hours after the onset of the eruption, vesicles appear on the inflamed parts, and these, on being broken, as usually occurs in the act of milking, expose a red, angry-looking ulcer, varying in size from one-third to three-quarters of an inch in diameter. The ulcers are mostly rounded, but sometimes ovoid or elongated, in the latter case resembling an



ordinary crack in the teat, the result of "chapping." After the discharge of a little blood-stained matter, the surface of the ulcers become coated over with a blackish or reddish-brown scab, beneath which the process of healing commences, and if undisturbed continues without interruption, repair being completed in from six to nine days. Where, however, the teat is exposed to the daily irritation occasioned in milking, the healing process is rarely completed before the expiration of from two to three weeks.

In some cases the eruption is confined to one teat only, in others it extends to two, and less frequently to three, or even all of them may be invaded.

From the first to the last the appetite remains unimpaired, and the flow of milk continues undiminished throughout the disease. The body temperature remains normal, and in every other respect the general conditions are such as to denote entire freedom from constitutional disturbance.

Of this affection it can be said that it is essentially contagious, spreading chiefly in the act of milking, by the transference of the discharges from the teats of the diseased to those of the healthy.

There is reason for the belief that one attack affords protection against a second, but the period of immunity is not determined.

From the cow the disease is frequently communicated to persons engaged in dairy work, where skin abrasions and scratches afford ready access to the virus. It is, as has been previously stated, an affection of common occurrence, and one I have frequently witnessed in dairy herds in various parts of the country.

The following are the facts which I have ascertained in regard to the history of the Hendon cows, and others associated with them.

The three cows purchased by Mr. Panter, and out of which the Scarlatina epidemic is stated to have arisen, were part of a lot of thirty cows bought by a dealer in Derby market on the 16 and 30th of October respectively. From the date of their arrival in Middlesex they were on offer for sale, and each day, or every other day, one, two, or more were sold to customers as they presented themselves. At this time several of the new cow stock were suffering from sore teats, and others contracted the disease before being disposed of.

So long as they remained in the dealer's hands they, with the unaffected cows, were regularly milked morning and evening, and the produce of the whole was disposed of in the usual way.

From the first day to the last while the milk of these cows was being drunk, no case of Scarlatina was heard of among the customers of the dairy.

Of the thirty cows above referred to eight were sold to a dairyman, whom I shall designate Mr. A., three were sold to Mr. B., and three to the late Mr. Panter, the unfortunate Hendon farmer. The remainder were disposed of in ones and twos to various metropolitan and provincial dairymen.

On arriving at Mr. A.'s three or four of the eight cows were noticed to have sore teats, but in other respects they appeared to be in perfect health, and this view of their condition was strengthened by the plentiful yield of milk each and all of them afforded.

Suspecting the eruption to be what is generally known as "Cow-pox," and fearing it might spread to the other portion of the herd, the herdsman was instructed to exercise such measures of prevention as would restrict the disease to the new-comers. The injunctions of the herdsman as to conducting the milking operations were not sufficiently regarded by the milkers, and in a few days it was found to have spread to other cows in the shed, and soon between thirty and forty of the herd were more or less affected by it. The trouble occasioned by so many cows with diseased teats was such that the services of two extra men had to be enlisted in carrying on the milking



operations, and in several cases hand-milking had to be abandoned to the use of the syphon.

While the disease was prevailing among the cows two of the milkers—men about twenty years of age—drew attention to an eruption on their hands, which, as far as the dairyman could judge, was identical with that on the teats of the cows.

Both cases were afterwards seen by a resident medical practitioner, who informs me that the men “were suffering from a well developed attack of ‘Vaccinia,’ contracted by them in milking,” and that so far as concerns their general health it was in no way disturbed.

To the two cases above referred to a third may be added. It occurred in the person of a man engaged in milking who had a small pimple on his face. Being irritable, he was induced to scratch the part with his hands tainted with the discharges from the diseased teats, with the result that a similar eruption shortly afterwards appeared on the inoculated spot.

These three cases assume the form of accidental experiments, and seem to exonerate the Hendon cow disease from any relation with or participation in the London Scarlatina outbreak. During the entire period while this cow disease prevailed there was no abatement in the produce of the dairy. Each cow giving an average daily yield of milk, consuming an average daily ration of food, and manifesting all the indications of good general health.

Notwithstanding the condition of the herd as to the eruption, the milk from each and every one of them continued to be distributed among the customers of the dairy each morning and evening, and at no time was any complaint lodged against it, nor was its wholesomeness brought in question.

That it did not possess the ability to produce Scarlatina or any other specific fever may be inferred from the testimony of the Medical Officer of Health, who has reported that no epidemic of any kind existed in the neighbourhood at the time.

While the disease was running its course here, the Scarlatina outbreak in London and its reputed cause was brought to the knowledge of Mr. A., who at once visited the suspected herd and carefully examined them. Finding the disorder of the Hendon cows to be identical with that of his own, he naturally became concerned as to the health of his customers, and on his returning home caused inquiry to be made in every direction, with the result as stated above on the authority of the Medical Officer of Health.

The disease thus transmitted by the now notorious Derby cows was not confined to the dairy of Mr. A., for it appears that in the month of January, when the malady appeared to have died out, and it was thought to have lost its contagious property, seven of the cows which had recently suffered from the eruption were disposed of to Mr. C., and added to a herd of over one hundred cows. The purchaser of these animals informed me that a short time after their arrival at his farm several of his herd became affected with an eruptive disease of the teats. Its spread here, however, was of very limited extent. This is accounted for by the fact that the great bulk of the herd had passed through the disease a few weeks before, and had thus become protected from a second attack.

The dairyman was fully conversant with the London epidemic of Scarlatina, and the suspicion which attached to the Hendon cows; but he continued to dispose of the milk as usual, assured by former experience of the disorder that it was quite incapable of harm. This conclusion was fully justified by the fact that no complaint was made in response to his repeated inquiries as to its wholesomeness, nor was there any special sickness of any kind among those who drank it.



The presumption of the inability of this cow disease to produce Scarlatina does not rest on these interesting and instructive cases alone, for, as I have previously pointed out, three of the Derby cows were sold to another dairyman, who has been good enough to forward me information respecting them. I shall distinguish him as Mr. B. This man received his new purchases on the 24th of October. On their arrival from the dealers it was remarked, while being milked, that one of them had an eruption on the teats, but no importance was at that time attached to it.

Some time during the first week of November the same form of disease was observed in other cows in the herd, and in a short time upwards of a dozen of the old stock became affected by it. Special precautions were now taken to guard against a further extension of the malady, the chief of which was to milk the diseased animals after the healthy ones, so that the tainted hands of the milkers should not be brought into contact with the teats of the latter. This, with other sanitary observances, proved effective in putting a stop to the affection and ridding the dairy of what was regarded as a troublesome but otherwise harmless ailment.

Here, as in the other cases already referred to, the milk was disposed of as usual without any ill consequences arising out of it.

Referring to Mr. Panter's practice in dealing with newly-calved cows, Mr. Power states the fact that "as matter of custom their milk is not used in the business immediately after calving, but after awhile and before the cow is removed from the quarantine shed if it is judged permissible to use the quarantine milk." In this connection I am informed by the dealer that one of the three Hendon cows calved at Derby and the two others while in his possession. All of them had calved several days before they were disposed of, and on being delivered to Mr. Panter were quite "clean" and ready to enter into the service of the dairy at once. That they did so I was assured by Mr. Panter himself, who stated, in reply to my inquiry, that from the day they came upon the farm the milk from these cows was mixed with the general stock supplied to the London retailers. The three Derby cows were added to the incriminated herd on the 15th of November, and from that time the milk furnished by them would be brought into use.

Now, the period of incubation of Scarlatina is from two to six days, and it is not unreasonable to infer that had the cow disease possessed the power, attributed to it of inducing Scarlatina, the London outbreak would have disclosed itself about the 18th to the 21st of November, but, as a matter of fact, it was not until the latter end of the month, or the beginning of December, that anything was heard of it.

In some cases which occurred in the course of the epidemic the period of incubation was noticed by Mr. Wynter Blyth to have been remarkably short, and in his report to the vestry of St. Marylebone he addresses the following examples:—"A child in the parish of Paddington came to see an uncle living near Dorset Square, had some of the milk, and in two days the symptoms appeared." In another case "a young gentleman came from a military college where there was no Scarlet Fever, drank some milk unboiled, and on the third day sickened with a mild attack of Scarlatina." It may be inferred therefore, that the type of the outbreak tended toward a brief incubative period.

Reviewing the facts stated above, I am of opinion that the disease which prevailed in the several herds referred to above had a common origin, being, in all, directly or indirectly, derived from the Derby cows. Five dairies were thus infected, but coincident Scarlatina was unknown in the customers of four of them, and the inference becomes irresistible that the London epidemic, which has been imputed to the fifth, had its origin in some obscure source connected with the dairy by channels which inquiry has failed to reveal.

March, 1887.

J. WORTLEY AXE.



## THE ORGANISMS OF THRUSH, FAVUS, AND HERPES.\*

GRAWITZ has demonstrated that the organism of Thrush is not, as it was formerly supposed to be, identical with the *Mycoderma aceti*; also that the *Achorion Schonleini*, *Tricophyton tonsurans*, and the *Oidium lactisne* are not merely varieties of the same species, but, on the contrary, they widely differ from each other, in their development, in the various culture media, in their fructification, and affinity to the different stains commonly used.

1. In slide cultivation on gelatine the *Oidium lactis* grows very rapidly, forming delicate mycelia, which generate without liquefying the gelatine. The *Tricophyton tonsurans* grows much more slowly and liquefies gelatine, in which it makes small depressions or pits, where the growth which in the centre is the colour of chalk thickens and branches out into rays. The white centre is formed of separate threads or filaments, which at the sides form numerous branches, and usually have elliptical-shaped joints or divisions. In cultivations that have been growing for some time the centre assumes a clear yellow, and the filaments an orange colour. The *Achorion* grows still more slowly, and macroscopically it is almost impossible to distinguish it from the *Tricophyton*, except that the germinative utricles have a distinct ramified appearance and the filaments are not divided into joints.

2. In gelatine the *Oidium* multiplies without liquefying it; the *Tricophyton*, on the contrary, liquefies it very quickly, and forms a thick crust, white on the top and yellow below. The *Achorion* liquefies gelatine still more slowly, grows with difficulty, and does not form joints. All these three grow well at the ordinary temperature of a room.

3. In Agar-agar, kept at thirty degrees Centigrade in the incubator, the *Oidium* forms a thin cloud over the surface, composed of thin jointed filaments that ramify with each other; but their thickness, size, and form greatly vary. The *Tricophyton* will form a colony of mycelia of the size and thickness of a lentil bean, which, of a yellow colour in the interior, appear to be powdered over with flour on the surface. These colonies join each other at the circumference. The *Achorion* forms flat, oval-shaped colonies in clear rings, which diverge from a central point having the same colour as the *Tricophyton*. Under the microscope the *Achorion* greatly resembles the *Tricophyton*, only the filaments are thinner and smaller.

4. In blood serum the *Oidium* develops in almost the same way as in Agar-agar. The *Tricophyton* forms a layer, which in places is covered with thick, oval, white spots, that soon turn yellow and liquefy the serum. The filaments of the *Achorion* much resemble those of the *Tricophyton*, except that they are more branched. Macroscopically, the culture of the Favus forms oval depressions, which later on become dry in the centre, and of a white or yellow colour.

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VETERINARY HONOURS.

In the Jubilee Gazette, issued on June 21st, among the eleven mayors upon whom the honour of Knighthood was conferred appears the Mayor of Windsor, H. L. Simpson, J.P., F.R.C.V.S. And in the list of Companions of the Bath (C.B.) appear the names of George Thomas Brown, Esq., Professional Officer (Veterinary), Committee of Council for Agriculture; and Principal Veterinary Surgeon George Fleming, Headquarters Staff of the Army.

\* From *Der Thierarzt*, No. 11, 1886. By Joshua A. Nunn, F.R.C.V.S., F.R.G.S. Army Veterinary Department.



**Proceedings of Veterinary Medical Societies, &c.****ROYAL COLLEGE OF VETERINARY SURGEONS.**

SPECIAL MEETING OF COUNCIL, HELD TUESDAY, MAY 24TH, 1887.

DR. FLEMING, President, in the chair.

*Present*:—Professors Axe, W. Duguid, William Pritchard; Messrs. J. D. Barford, B. Cartledge, J. S. Carter, J. Roalfe Cox, E. C. Dray; Dr. Fleming; General Sir Frederick Fitzwygram; Messrs. Thos. Greaves, J. Harpley, James McCall, W. F. Mulvey, H. R. Perrins, A. H. Santy, J. H. Simcocks, H. L. Simpson, J. F. Simpson, Peter Taylor, William Whittle, W. F. Wragg, and the Secretary.

The SECRETARY read the notice convening the meeting.

On the motion of Mr. DRAY, seconded by Mr. CARTLEDGE, the minutes of the previous meeting were taken as read and confirmed.

*Absentees.*

The SECRETARY informed the Council that he had received letters from Professors Walley and Robertson and Mr. Woods, regretting their inability to attend the meeting.

*Election of President.*

Mr. E. C. DRAY said that again he had the pleasure of proposing a gentleman to fulfil the duties of President of the Royal College of Veterinary Surgeons. It was desirable, in the selection of a candidate, that he should possess undeniable qualifications to command the unanimous support of the Council. The gentleman whom he had the gratification of nominating was Mr. H. L. Simpson, of Windsor. The honours and distinctions which had been conferred on that gentleman made it in every way desirable that he should occupy the position of President of the Council. Mr. Simpson had been a most energetic member of the Council, and most devoted to the profession at large. He felt sure that if Mr. Simpson were elected that day through his position and his influence he would exert all his powers for the advancement and the welfare of the profession. It should be borne in mind how much Mr. Simpson was held in the estimation of the profession. At his re-election on the Council he had obtained a high number of votes. He therefore trusted that the Council would unanimously elect Mr. Simpson as their President for the ensuing year.

Mr. CARTLEDGE seconded the motion.

The ballot was then taken, and Mr. H. L. Simpson was unanimously elected President of the Council for the ensuing year.

Mr. H. L. Simpson then took the chair in the place of Dr. Fleming.

The PRESIDENT said he begged to return his sincere thanks for the very great honour conferred on him in being elected President of the Council. He realised the responsibility of the position deeply, for he felt that it would be useless, especially at this crisis, to attempt to enjoy the honours of the position unless he was prepared to face and grapple with the responsibilities and difficulties which might beset his path. With regard to himself, he might say that he was born in the profession, and had been a humble worker in it ever since he had been admitted a member of it, and, under these circumstances, he trusted he should be able to fulfil some of the good wishes which had been vouchsafed to him. With regard to the future, he had noticed, with a great deal of satisfaction, that, as the annual meetings came round, the President had not been obliged, like the leader of a party, to make any declaration of policy. The Council elected the man whom they thought most likely to be of service to them, and they rather left to him the destinies



of the profession—that was to say, they did not hamper him in any way. There had been a rumour of late that disunion was threatening—that the privileges which they enjoyed under their Charters and Act of Parliament were likely to be interfered with. He was a Unionist to the backbone, and he would do his utmost to combat the efforts of anybody who attempted to interfere with the rights and privileges which were at the present time enjoyed by the Royal College of Veterinary Surgeons. Unfortunately, during the last year, there had been differences which had somewhat disturbed the peace of the profession, and possibly had interfered with its welfare. As he had said on another occasion, he was a man for “peace with honour,” and he hoped the profession would make an earnest endeavour to try and settle the differences which had prevailed between an Edinburgh section and the Royal College of Veterinary Surgeons. His election was with the unanimous vote of the profession, and it was for the Council to back him (the President) in endeavouring to preserve peace in their ranks. The profession had immensely added to its power, for it had several Charters and an Act of Parliament, and all that was wanted was time to unite their forces and use their power with moderation. They had the strength of a giant, and they need not use it as a giant, but judiciously and carefully. They must all admit that they were deeply indebted to their excellent friend, Dr. Fleming, who had vacated the chair, for the great advances which had been made, and for their having obtained the last Charter and the Act of Parliament. They could not, he thought, look back upon those ministerial acts which Dr. Fleming had been so instrumental in bringing about without feeling how much they were indebted to him. He again thanked the Council most heartily for their kindness in electing him their President, and he assured them that he would do his utmost to maintain the honour and dignity of the profession.

Professor PRITCHARD proposed a hearty vote of thanks to the late President. Everyone who knew Dr. Fleming must know that he had transacted the business of the College in a most business like and efficient manner.

Mr. A. H. SANTY seconded, and Mr. DRAY supported the resolution, which was unanimously agreed to.

Dr. FLEMING said that at any time a vote of thanks from the Council was an honour which must always be received with great gratitude and pleasure. He resumed the office and responsibilities of President last year because there was no one at the time who would be likely to accept the position. He confessed that it was with some misgivings that he undertook the duties, but, nevertheless, having spent the best years of his life in promoting the interests of the profession, anything that the Council desired him to undertake must necessarily receive his ready assent. The duties of the office during the past year had been somewhat unexpected. There were certain functions pertaining to the office demanding a great amount of care and entailing a vast amount of thought and attention. He confessed that the event which occurred during his year of office had been entirely unlooked for; nevertheless, as President, he had worked to the best of his ability to maintain the dignity and high reputation of their calling, and to steer the ship through the rocks and shoals in which they found themselves for the moment. He was not at all apprehensive of anything serious occurring from the results of the disturbance to which he alluded. He knew the Royal College was entirely in the right, and that the people who had put themselves in opposition to it were in the wrong. He need not say that he was heartily pleased that Mr. H. L. Simpson had been elected to the office of President. He was sure that the dignity, welfare, and reputation of the profession would not suffer at his hands. He (Dr. Fleming) had held the office of President for a number of years at the pleasure of the Council, and, although he should



never hold that office again, it would always be the greatest satisfaction to him to know that he had merited approval in what he had done.

*Election of Vice-Presidents.*

Mr. Woods, Professor Brown, Messrs. J. F. Simpson, Blakeway, Simcocks, Bell, Santy, Banham, Briggs, and Walters were nominated for election as Vice-Presidents.

The ballot was taken and the CHAIRMAN declared Messrs. J. F. Simpson, Simcocks, Woods, Professor Brown, Mr. Santy, and Mr. Briggs to be duly elected Vice-Presidents.

*Election of Treasurer.*

Professor PRITCHARD moved that Mr. E. C. Dray be elected as Treasurer for the ensuing year.

Mr. J. ROALFE COX seconded the motion.

Mr. E. C. DRAY said he was extremely obliged to Professor Pritchard for proposing his re-election as Treasurer, but he was sorry to have to inform the President that owing to failing health he must retire from the Council. He had not taken the step without due deliberation or without very eminent medical advice, and, therefore, at the termination of the meeting his alliance with the Council must cease.

Professor PRITCHARD expressed his sorrow at the decision arrived at by Mr. Dray, but at the same time trusted that he would see his way to reconsider the matter and remain with them as Treasurer.

The PRESIDENT said that the Secretary had kindly offered that at any time when it was necessary he would call upon Mr. Dray and so save him the labour of coming from his home as much as possible, in order to attend to necessary duties. He (the President) hoped most sincerely that Mr. Dray would see his way to remain in office.

Mr. B. CARTLEDGE also urged Mr. Dray to take the office of Treasurer for another year. He should exceedingly regret to have to attend the Council meetings without having the pleasure of seeing Mr. Dray, who had been so honourably and so long connected with the profession, and it would be a great loss to every member of the Council whose acquaintance and friendship he had to lose him as a member of it.

Mr. W. F. WRAGG also endorsed everything that the previous speakers had said, and asked Mr. Dray as a favour to continue his services on the Council.

Mr. E. C. DRAY said that he was quite overwhelmed with the kind remarks which had been made. He was really most anxious to remain, and if he acceded to the wishes of the Council and remained in office they must allow him to go away very frequently before the meetings had concluded. Under these circumstances, if it was decidedly the wish of the Council, he would remain with them.

The ballot for the election of Treasurer was then proceeded with.

General Sir FREDERICK FITZWYGRAM suggested that their solicitor should be consulted as to whether, when there was no opposition, it was necessary to have a poll. He thought the solicitor would rule that when there was no opposition the clause in the Act did not require a poll to be taken.

The PRESIDENT then announced that Mr. E. C. Dray had been unanimously elected Treasurer for the ensuing year.

Dr. FLEMING said that he received the announcement of Mr. Dray's re-election with very great pleasure. It was with deep regret that he had heard Mr. Dray's intimation of his intention to retire from the Council and from the office which he had held so worthily for so many years. He could testify



to Mr. Dray's devotion to his duties, and to his extreme anxiety that the finances of the Corporation should stand in a good position, and to his extreme care in allotting the funds. He was sure he would be only expressing the opinion of the Council in proposing a vote of thanks to Mr. Dray for the valuable services which he had rendered to them, and also on behalf of the profession for his having accepted office under the conditions which he had stated.

Mr. J. H. SIMCOCKS seconded the motion, and said he entirely agreed with every observation which had fallen from Dr. Fleming. He trusted that Mr. Dray would for many years to come be able to perform, in the future as he had done in the past, the duties of Treasurer.

The motion was carried with acclamation.

Mr. E. C. DRAY, in reply, thanked Dr. Fleming and the Council generally for the flattering terms in which his name had been mentioned. He had only to reiterate that if he could be of service to the College he would do the utmost in his power. If he was in order he should like to mention that their old associate, Mr. Greaves, had given a third contribution to the College Fund, but it was given conditionally, that other members of the Council should follow the good example. He was sorry to say that that had not been done; but as it was never too late to mend, he hoped the Council would take the matter into consideration and follow Mr. Greaves's generous example. He also hoped, as he had said at a previous meeting, that before "shuffling off this mortal coil," he would see the institution out of debt.

#### *Appointment of Secretary and Registrar.*

Mr. E. C. DRAY said that having been so much connected with their worthy Secretary and Registrar, Mr. Arthur William Hill, he could speak with sincerity and truthfulness of how assiduous he had been in his duties, and he thought the College might congratulate itself in possessing a Secretary who identified himself so much with the interests of the institution. He had great pleasure in proposing the re-election of Mr. Hill.

Mr. GREAVES said that he had had considerable experience on the Council, having sat under four secretaries. They had not had one that he had more confidence in or more respect for than the present Secretary, Mr. Arthur W. Hill. He had great pleasure in seconding Mr. Dray's proposal.

Mr. E. C. DRAY said that the Register had been greatly improved of late, and he trusted that members of Council would assist Mr. Hill by informing him of any deaths in the profession that might occur in their districts. If such information were forwarded to the Registrar it would be of the greatest assistance to him.

The ballot was then taken, and the PRESIDENT declared Mr. Hill to be unanimously re-elected as Secretary and Registrar to the Royal College of Veterinary Surgeons.

Dr. FLEMING said that he should be neglecting his duty if he did not express the pleasure with which he received the announcement of Mr. Hill's re-election. He had had a great experience of Mr. Hill's abilities, of his constant attention to the duties of the Royal College, and of his extreme anxiety that those duties should be most carefully carried out. He could testify also to the extremely great services which had been rendered to the College and the profession by Mr. Hill. He therefore thought that the Council should be thoroughly satisfied to find that it was again for another year in the hands of the same Secretary, who had been so long in, and devoted himself so much to, their service.

Mr. A. W. HILL said that he could not thank the Council too much for their expressions of kindness and for the honour conferred in re-electing him as Secretary and Registrar. He thanked them for his re-election, and his

best endeavours would be to do the utmost he possibly could in the interests of the Council and of the profession.

*Notice of Motion.*

Mr. A. H. SANTY gave notice of motion that at the next meeting of the Council he should lay designs on the table for the window which was to be given by the North-Eastern Counties Veterinary Association and the Lancashire and Western Counties Association.

Mr. E. C. DRAY said that before separating they ought to propose a vote of thanks to their new President. He had made an excellent beginning, and if he followed it up in the way he had commenced the profession must necessarily reap the harvest. He was glad to congratulate Mr. Simpson on his position, of which he was most deserving, and he trusted that health would be granted him to carry out his duties.

Mr. GREAVES seconded the motion. It reflected, he said, great honour and credit on the Council that a man occupying so distinguished a position as their President had done them the honour of presiding over them.

The motion was put to the meeting and carried.

The PRESIDENT expressed himself as exceedingly obliged for the encouraging proof of their confidence in him. The duties that day had certainly not been of a very arduous character. If, however, he had given satisfaction in this preliminary, he hoped to continue to do so throughout the year.

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

*(Continued from page 454, vol. xxiv.)*

The study of anatomy was revived about the middle of the sixteenth century by Vesalius, at Pisa. Eustachius followed in his footsteps, and their discoveries tended much to shake the authority of Galen. Galileo and Bacon also introduced a new system of philosophy which had the effect of overturning the system of Aristotle, and by the middle of the seventeenth century the authority of Aristotle in philosophy and of Galen in physic were all but completely destroyed.

Every department of science had now undergone a thorough revision; anatomy had been gradually improving for a hundred years; the minds of men were being prepared for receiving new facts, when, in the year 1628, our immortal countryman Harvey published to the world his discovery of the circulation of the blood, but it required half a century for the circulation of the blood to be admitted; and it is well known that the doctrine was not received by any physician who was more than forty years old. This discovery overturned all the former theories of the constitution of the body, and placed the science of medicine on the sound basis of mathematical demonstration. Previous to the discovery of the circulation by Harvey, the lacteals had been discovered by Asselius, and the receptacle of the chyle and the thoracic duct by Pequet. The true course of the blood and the chyle being thus known, the liver was removed from the important function it had held so long in the system of Galen. In this manner the animal economy, which had hitherto been viewed in separate parts, and had been looked upon from without, was now studied from within, and as a connected whole.

Before this period the Galenists, and still more the chemists, had been accustomed to look upon the state and condition of the fluids of the body, both as the sole cause of disease and the only means of explaining the operations of medicines. They were therefore called humorists. But after Harvey's discovery the attention of physicians was, in some measure, forced



towards the organic system. The study of mathematics also prevailed at the same time, and what were called the mathematical or mechanical physicians arose. By degrees all the systems became blended together, and the science of medicine was gradually improved.

Sydenham, about the middle of the seventeenth century, formed a system of medicine for himself; he sought rather for theory to unite his observations under general heads than for facts to confirm his theory.

Among the most distinguished names in medicine during the seventeenth century may be mentioned—Glisson, Bartholin, Rudbeck, Fabricius, Hooke, Sylvius, Willis, Riolanus, Fallopius, Bellini, Pitcairn, Mead, and Friend. Towards the close of the seventeenth and the beginning of the eighteenth century we have the celebrated Stahl, Hoffmann, Boerhaave, each of whom formed a new and considerably different system of medicine. Time will not permit to describe the life-work of each of these great men. That Boerhaave was one of the greatest physicians of modern times cannot be denied. At one time he held the chair of theoretical medicine, practical medicine, botany, and chemistry. There is a story that a Chinese mandarin wrote him a letter, which easily reached him, addressed to Boerhaave in Europe. The learned of every part of Europe corresponded with him, and every academy desired to be honoured by dissertations from the hand of the most distinguished master of his art. Patients came from the more distant parts of Europe to consult him. The pecuniary proceeds of his practice must have been enormous, for at his death he left more than two millions of florins. After these, in the eighteenth century, we have the names of Haller, Heberden, Cullen, Brown, Gregory, Hunter, Jenner, Galvani, and Volta. Time will not permit me to touch on the doings of all these great men, but it would be remiss in me if I were to pass over without paying a word of tribute to Hunter and Jenner. Hunter may be said to have been as great a man as ever practised surgery. His operation for aneurism was one of the most brilliant discoveries of his century. He was the first to describe inflammation of the veins. He first published lucid views on the venereal disease, and by his work on inflammation improved the modes of practice applicable to nine-tenths of the diseases which fall within the province of the surgeon. But it was less by individual discoveries than by the general tone of scientific investigation which he gave to surgical practice that he made it a science rather than a mechanical art, and induced men of far higher attainments than those who had before practised it to make it their study.

The discovery of vaccination by Jenner may be said to have eclipsed every other discovery of modern science in the amount of benefit it has conferred on the human race. The first incident in the story of discovery dates back to the time when Jenner was apprentice with the eminent surgeon Mr. Ludlow, at Sodbury. One day a young country-woman appeared at the surgery of his master for advice. The Smallpox was casually mentioned in her hearing; she immediately observed, "I cannot take that disease, for I have had Cow-pox." This assertion made an impression in Jenner's mind; it was the first time he had heard what had been a tradition among the peasantry in the dairy districts of Gloucestershire for many years. The progress of vaccination was darkened at the outset by various disappointments and obstacles. Objections were numerous, and rival claims to the merit of discovery were set up. But a high tribute was paid to Jenner in the year 1799, when a large number of the leading physicians and surgeons signed an earnest expression of their confidence in the efficacy of the Cow-pox.

Since the time of these distinguished men we have the names of many eminent men, so well known to the student of medicine that it would be superfluous in me to enumerate them, who, by their individual efforts, have

helped in advancing medicine with such rapid strides to the position which it now occupies. Within the last fifteen or twenty years, what science has advanced with such incredible speed as the sciences of chemistry, pharmacology, physiology, and pathology? And within that time we have the new science of bacteriology added to our list, and which is likely to make a revolution in medicine. The veterinary profession can justly lay considerable claim to the reputation of the advancement of this the youngest and most promising of our ologies. And within the period of fifteen or twenty years veterinary literature has made wonderful progress, principally through the efforts of a band of workers devoted to the science and practice of their profession, and who richly deserve the thanks and admiration of the general body of the profession. Let us hope that the future may be still more fruitful in results, and to this end may the motto of each of us be "Excelsior!"

On the motion of Professor BAIRD, seconded by Principal WILLIAMS, a cordial vote of thanks was accorded to the President for his address.

*Azoturia in the Horse—How Doctors Differ!*

Professor M'FADYEAN, on rising to direct the attention of the meeting to a disease he had recently been investigating, said that with the change of president he could not help congratulating himself that he was now in no danger of being arbitrarily silenced because he might have to express opinions that did not harmonise with those of the chairman. The disease was known by the name of Azoturia. His attention was first directed to that disease because he thought the current pathology of it was in direct conflict to some well-known facts in connection with physiology. He believed the commonly accepted theory of Azoturia was that it was excited by strong muscular action after the animal had been standing for a time at rest; and that there was in the urine of the animal, almost immediately after the first symptoms of the disease, a great excess of urea. This theory further supposed that while the animal was standing at rest, and getting its ordinary diet, nitrogenous compounds were being stored away in the animal system for future use. When that animal was put to work there was a rapid metabolism of those albuminous matters, and thus urea was formed, and appeared in the urine in great excess. That theory appeared to him to be founded on an error, for the excretion of urea has been proved to be practically independent of muscular exertion. He investigated a considerable number of cases in the practice of some of his friends. In no case did he find an excess of urea in the urine, if the urine was taken immediately after the attack. He perhaps should state, however, what he regarded as the normal proportion of urea in a horse's urine—twelve grains of urea per ounce of urine. In only one of the cases he examined did the urea amount to twelve grains per ounce of urine. In some cases there were only nine grains of urea. He did not trust his own chemical abilities. The urine was analysed in the chemical laboratory, and calculated on the basis of the total amount of nitrogen present. In the most recent case which came under his observation, the second sample of urine was of lighter colour than the earlier specimen, and contained about eighteen grains of urea. This might be attributable to the fact that the animal had not consumed any water during the previous twenty-four hours. The next point in which his observations differed with current opinions was that whereas it was stated that albumen was not present in the urine, he found albumen always present, in some cases amounting to as much as one-third. When proper precautions were taken to precipitate it, albumen was easily discovered; and he thought that the reason why certain investigators had failed to demonstrate the presence of albumen was to be found in their neglect of these precautions.



A third point in which he found himself at variance with current opinions was, that the urine was ammoniacal when it was passed. He found no ammonia when it was newly passed, but that after lying for a short time it became ammoniacal. He did not intend to form a theory, however, of Azoturia; he wished to simply give the gentlemen present a *résumé* of his experience of the disease, and he hoped it might lead to further research in this important matter. (Applause.)

Professor M'CALL, Glasgow, asked whether the death of the animals was supposed to be due to Azoturia.

Professor M'FADYEAN: All the cases were unmistakably caused by Azoturia.

Professor M'CALL said that he had seen several cases of the disease, but was not aware of any of the animals in his practice having died from it. The muscular tissue in some cases got paralysed, but the animals, with careful treatment, invariably recovered.

Principal WILLIAMS said he had seen the very same conditions as those described by Professor M'Call—the animal wasting away to a mere skeleton. They usually wasted so far that they took from nine to twelve months to recover. He had had a good deal of Azoturia. He thought he was the first to describe the disease as Azoturia, excepting Haycock, who called it Hysteria, and he confessed his conclusions were different from those of Professor M'Fadyean. In few cases he did discover albumen to be present. In many cases he found nothing in excess but urea. They would observe the analysis of the urine in his book, and he thought that at one time at least he had Professor Walley's support that albumen was absent. In the last analysis made he found urea, albumen, and sugar present; but he differed entirely with Professor M'Fadyean, when he said that the urine was not ammoniacal. (Hear, hear.)

Professor M'FADYEAN: Would Principal Williams kindly say what he considered the proper ratio of urea?

Principal WILLIAMS: I have said what I had to say, and I decline to be cross-examined by Professor M'Fadyean. (Hear, hear.)

The PRESIDENT thought the disease should be further investigated. In one case which came under his observation blood was present in the urine; in another there were 8·3 grains of urea; and in another urea was still more plentiful. In this last case the urine was loaded with crystals. He always treated the disease as Congestion of the Kidneys, because he found the kidneys invariably more or less paralysed. He did not believe in putting the affected animals in slings; he preferred to let them lie until they were able to raise themselves. When they could urinate freely they usually recovered quickly—about three or four days was the longest he had ever seen ill. The last animal under his treatment rose to his feet on the third day, but it relapsed and died.

Mr. CAMPBELL, Kirkcudbright, said his experience had been that, in the event of his patients getting down, death was the inevitable result. He, like Professor M'Call, also found that the muscles of the quarters of the affected animals were injured, and that they entirely recovered again within thirteen months.

Mr. SPREULL, Dundee, said he had been unable to make up his mind as to the exact nature of the disease, but they undoubtedly had paralysis in almost every case. What that arose from he could not venture to say, but he never found blood-cells in the urine. He had one very bad case recently, in which the patient lay for ten days, and his urine was strongly ammoniacal.

On the motion of the PRESIDENT, it was resolved that the subject should be more fully considered at the next meeting of the Association, when Professor M'Fadyean agreed to open the discussion.

*The Examination Disturbances.*

Reference having been made to the recent disturbances among the veterinary students regarding their examination in Edinburgh, Mr. CAMERON, Berwick, deprecated the newspaper warfare that had been carried on as a greater disgrace to members of the profession than the disturbances were to the students, and characterised the proceedings of the London Council at its recent meeting, as an insult to common sense and justice. (Applause.) It might be expected that as a society they should take some notice of the matter, and he suggested that something should be done. He suggested whether the meeting should not express regret that the students on a recent occasion should have been guilty of a gross breach of gentlemanly conduct, and entreat the students so to conduct themselves in future as to adorn the profession. At the same time, when they thought of the chronic complaints of professors of various colleges and of members of the profession in regard to the examinations, the Society might express the belief that there must have been predisposing, if not acute, causes for the recent outburst of feeling. In view thereof the meeting could request the Council of the Royal College of Veterinary Surgeons to appoint a commission to investigate the whole subject, such investigation to be conducted at Edinburgh, Glasgow, London, and other towns, and to be open to any member of the profession.

A vote of thanks to the President closed the meeting.

*The Annual Dinner*

of the Association was held in the evening, and was presided over by Mr. Burnett. Principal Williams was croupier, and there was a good attendance.

Mr. A. SPREULL proposed "The Royal College of Veterinary Surgeons." He referred to a suggestion made some years ago that the Royal College of Veterinary Surgeons should give them a territorial scheme of redistribution for the seats of membership of the Council. That scheme apparently had been shelved, at all events they had heard nothing about it for a long time. He was afraid they should hear no more about it, unless they stirred up some of the energy which they put in force at that time. But until they got that scheme Scotland would be unrepresented on the Council. Scotland could not at this time return a single representative unless she was aided by English representatives. That was a position which they, as Scotchmen, ought not to submit to. They had practically no vote; until they got their English friends to assist them they were practically powerless. The actions of the Council of late, he understood, had caused a great many heartburnings. Whether he could homologate the action of the Council in that respect, he did not know if it was very judicious to enter upon here. (The CHAIRMAN: "Wish them reformation.") He wished them better lines of conduct for the future. He hoped they would see their way, if necessary, to punish the students in a better way than just now.

Professor M'CALL, who replied, said he thought that they, as Scotch representatives, took as active a part in the management of the affairs of the Council of the Royal College of Veterinary Surgeons as they were entitled to do. They were aware that two or three years ago Professor Williams, Professor Walley, and himself endeavoured to rectify what they thought were some defects in connection with the Examining Board. He tabled a motion that practical examinations should be altered in several respects, and that the number of examiners should be increased. They managed to carry that proposal, but they found afterwards that they had legally overstepped the power that in reality they thought they had possessed, so that matters required to go back to much the same line as they hitherto had run in. Since



then, seeing that things could be no better, and that it would be better to allow things to rest as they were, they had done so. He would not like it to go abroad that they in Scotland were entirely under the thumb of England. He thought that the members of Council were happy to pay attention to anything which Scotch representatives expressed, and he knew that in due time many of the little grievances which they believed they had reason to complain of would be redressed. And he should suggest to the gentlemen present that they take every means of increasing their influence with the Council and Board. They said they were not properly represented, but what did they do to increase that representation? Very few from Scotland attended the annual meeting in London. He thought that was not what it ought to be. The members ought to go up to the annual meeting and give expression to their wishes and ideas, and he was quite sure their English friends would be willing to give them attention. With regard to what had taken place during the last few days he was not inclined to make any remarks. When he, as a member of Council, had an invitation to attend this meeting in London, he said to himself, "Well, I will not go to stand in judgment on any of the students in another college." Perhaps he was wrong. (Professor WILLIAMS: "I am like you.") But to have gone up to London and sat in judgment on students of an Edinburgh College, he had yet to learn that he ought to have done so. He thought it was unfortunate, considering that a new Board was so near being appointed, that things had happened as they did.

"The Scottish Metropolitan Veterinary Medical Society" was proposed by Mr. A. A. MACFARLANE, and the toast was replied to by Professor BAIRD.

Mr. CORNELIUS CUNNINGHAM then proposed "The Kindred Societies." Referring, among others, to the Glasgow Society, he remarked that he believed it was the first Veterinary Medical Society established in the United Kingdom. (Hear, hear.) He expressed the view that the opinion that none except Fellows ought to be members of Council was wrong. (Hear, hear.) He did not see how passing a professional examination showed that a man was fitted to be a member of Council.

Mr. JAMES BORTHWICK replied.

Among other toasts was that of "The Visitors," proposed by Professor BAIRD.

## THE WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

*(Continued from page 443, vol. xxiv.)*

I am told that along caravan routes in eastern countries, where there is usually a great deal of intermarrying, the same classes of disease prevail. And along the estuaries of rivers in this country cancer is said to be frequent, but, in my opinion more, from the fact that in those valleys the families are all nearly related to each other than from any atmospheric or geological cause. Unhappily, my own neighbourhood is said to be one of those cancer zones.

With in and inbred stock the hereditary tendency to Tuberculosis is great, and, from my own observations, I believe it to be also contagious.

From a noted Devon herd, now broken up, it was found almost impossible at one time to rear a single calf. Some time back my attention was called to a lot of Devons, which had descended from father to son for generations; very little fresh blood had been allowed to intermingle with the herd; the healthy animals still retained an almost perfect symmetry; they had a great aptitude to fatten and arrive at early maturity. But every now and then one would be found with enlarged glands about the throat, others with a persistent short cough and quickened breathing, partial loss of appetite, and a disinclination to lay on flesh, with always a temperature heightened by two or three

degrees. Some of these animals died, and I made *post-mortem* examinations, and found extensive tubercular deposits on almost every important gland and organ of the body.

I advised the owner to get new blood into his herd by introducing a bull from a strange family, which he did; but the disease still prevailed, even in the young stock. At last, by my advice, he decided to get rid of the whole herd, but he did so slowly, weeding out his old animals by ones and twos, and buying new of various breeds, principally rough Devons and Irish, to fill the gaps. These were housed and allowed to intermingle with the old herd in low, ill-ventilated buildings. When, after a time, some of these new animals also became affected in the same way as those which died before, I again made *post-mortem* examinations, and found the disease affecting the various organs just as before. To my mind, it is certain that these were infected by coming in contact with tuberculous animals, mingling with them, breathing the expired air, and perhaps consuming discharges loaded with the spores of the *Bacillus Tuberculosis*.

The prevalence of this disease among some of the best families of short-horns is but too well known.

It is truly surprising sometimes to find how extensively an animal may be diseased internally, and yet show but little external symptoms. A case occurs to me of a celebrated short-horn bull (I must forbear to mention his name), a sire of some of the best cattle of the day. I only knew him in his old age, but he then appeared in good health, and was a truly fine specimen of his race. On some days, it is true, he would be troubled with a slight cough, but was well nourished—in fact, fat—his appetite good, and his procreative powers all that was desired. About a week before he died, he was seized with what appeared to be a bad attack of Bronchitis, with a persistent high temperature (in tuberculous cattle I have always found the temperature high), from which he died. I made a *post-mortem* examination, and found tubercle of every stage and degree, from the small miliary tubercle to large caseous masses on the pleura, lungs, heart, liver, spleen, peritonium, mesentery, and muscles, all covered with a mass of disease.

I mention this case to show there must be a dead as well as a live inspection, to ensure meat free from Tubercle; and of all diseases, it is the one from which flesh intended for human consumption should be free.

Gentlemen, I hope I may not weary you, but hasten on to briefly speak of Cattle-plague, Pleuro-pneumonia, Foot-and-mouth Disease, Swine Fever, Black Quarter, Rabies, and Sheep-pox. It still happens a few of the latter occasionally reach our foreign animal wharves.

These diseases are all due to specific animal poisons, in all likelihood to microbes of one form or another, some of which have already been discovered, and some cultivated and attenuated, and can be employed protectively. These specific poisons exert their greatest influence on the alimentary canal in Cattle-plague and Swine Fever; in the lungs in Pleuro-pneumonia, which in this disease will sometimes weigh as much as twenty or thirty lbs.; the mouth, feet, and secretion of milk, in Foot-and-Mouth disease; the brain fauces and salivary gland in Rabies; the skin in Variola Ovinæ, and usually the voluntary muscles in Black Quarter. The local symptoms are the manifest ones, and are generally outlets for the virus. From what is now known of these specific animal diseases, there can be no doubt but the virus does exist in the blood of one and all of them. Professor Coleman was the first to make proof of a most valuable discovery in this direction. He produced Glanders in the ass by transfusion of the blood from the carotid artery of a glandered horse, and Dr. Sanderson produced Cattle Plague by inoculation with the serum from the blood of an animal in the earliest stage of the disease, the only symptom discoverable being a rise of temperature.



If, then, the blood of these animals is full of specific poison, all the tissues of the body must be more or less impregnated with it also. Knowing these facts, it is clear to me that all meat so contaminated is unwholesome, and quite unfit for the food of man, and must therefore be condemned.

In my opinion no animal at, or about, the time of Parturition, or suffering from Parturient Apoplexy, can be wholesome food. At such a time there is always a more or less diseased condition of the nervous system, and also a great probability, as was so ably pointed out in the very last essay read before this Association, of material, and often enough morbid material, becoming absorbed into the system from the uterus. In the case of Parturient Apoplexy there are also other dangers, for both secretion and excretion are almost suspended, leaving much in the blood which should be eliminated. Digestion is arrested, the food in the stomachs decompose rapidly; in all probability some of the liquid portion of the decomposing mass becomes absorbed into the circulation, and so taints the system.

Notice the violent diarrhoea which always follows recovery, Nature's method of removing the poison from the body. Local congestion of muscles and organs are also nearly always present. The fætor from the eructations, and stench from *post-mortem* of the stomachs should be enough to convince the most sceptical that the flesh of such an animal is totally unfit for food.

It may be in times past, the veterinary surgeon, in order to escape somewhat the responsibility of losing a sick patient, has recommended its slaughter for food. The whole blame must not be cast on the veterinary surgeon; for it has been thrust on him by the custom of the country, and the overbearing of his client when a patient has died.

A client of mine kept a butcher, in addition to the attendant under my orders, by a critical case the whole of one night, with instructions to slaughter in case symptoms were exhibited of approaching death. But it is high time for us, as pathologists, and a body of men with a knowledge of physiology, to set our faces dead against such a system. Better far, and the public will value and appreciate us more, if we make a firm stand, and do as a practitioner, and a near friend of mine, did a short time since. He was treating a cow for Parturient Apoplexy, on his arrival one morning at the farm, he was told by his client that he was sure the cow would die, and he had made up his mind to kill her, and send her to London. The veterinary surgeon at once said such a cow was not good for food, and if she were killed and sent away, he would at once inform the authorities. In the face of this the farmer was afraid to kill his cow; he asked the veterinary surgeon to go on treating her, and in the ends he made an excellent recovery.

Animals which suffer from slight or acute ailments, such as colds, inflammation of the brain or viscera, the formation of abscesses in the lungs or any other part of the body, cannot really be said to be wholesome food; even in the early stages of these diseases there is an abnormal rise of temperature, often great. Effete, morbid, and deleterious, products are much more rapidly thrown into the blood and absorbent system, and retained there, than when the animal is in health. We are told by physiologists the blood goes the round of circulation every few seconds, and that a substance introduced into the jugular vein can be detected in a remote part of the body almost immediately after. Thus we see if diseased products enter the circulation from an abscess, an inflamed or diseased structure, at one point, within a few moments after the cells and tissues of a distant part may be bathed in this perverted blood plasma, and we know the cells are influenced, and receive their characteristics, and partake of the quality of the plasma flowing to them.

Parkes, in his splendid work on "Practical Hygiene," says: "We should conclude from general principles that as all diseases must affect the compo-

sition of flesh, and as the composition of our own bodies is inextricably blended with the composition of the substances we eat, it must be of the greatest importance, for health, to have these substances as pure as possible. The composition of muscle must exert an influence on the composition of our own nitrogenous tissue."

Gentlemen, I maintain an animal in ill health cannot supply healthy structures for food, any more than a potato which has had its starch cells destroyed by fungi, or wheat whose granules have been substituted for the vibrio tritici. The same remarks will apply to animals which have received accidents, unless they are slaughtered almost immediately after such accident, before there is a rise of temperature, or inflammation has set in. In the case of rotten sheep and a few diseases which will come under the same head, although, perhaps, it may be contended that no deleterious material does exist in the blood or tissues, yet we well know the nutritive value of the meat is enormously reduced. To sell, therefore, this class of meat to the unsuspecting buyer as sound food is to my mind nothing short of fraud.

Animals intended for food should be carefully inspected whilst alive, immediately before slaughter, and should present all the characteristics of good health, the signs of which are so well known to you all that I need not dwell to describe them.

After slaughter the viscera must also undergo an examination. I attach the greatest importance to this part of the work, and I never neglect to look at the various organs, if they are obtainable, when inspecting meat. The heart should be free from blood stains, the lungs of a bright pink colour, floating freely in water, and should weigh from seven to eight pounds in ox. The liver must be free from recent disease; the spleen should be sharp edged, grey externally, and dark red within; the stomachs and intestines free from all blotches and traces of inflammation.

The one half of the carcase should not be darker than the other; and should not pit on pressure, as it does when gases have escaped into its tissues. Sound flesh, fitted for human food, is firm to the touch, and the fat partakes of the same character. It should not be moist, or sodden from excessive moisture. The marrow should be light rosy red. Care should be taken to observe that there are no hæmorrhagic spots, which often arise from blood poisoning. The internal fat of good meat is never speckled with these blood points. Well fed flesh should be marbled in appearance—neither too pale, nor too dark. The flesh of young animals is paler than older. The odour of sound meat is not disagreeable, somewhat sweet and faint; any deviation from this should arouse suspicion. Where the odour is of a compromising kind, putrefaction has set in, and it may indicate the presence of disease which has caused the earlier onset of decomposition. By chopping a piece of suspected meat and placing in warm water, the bad odour will be intensified. In dealing with large joints, a skewer or knife may be plunged into the flesh and tested for the odour; it will also show different points of resistance if putrefaction has set in.

Putrefying meat is of course absolutely condemned. Some difficulty may here arise to the inspector, as cheese actually moving is eaten with impunity, and it is the fashion to have game more or less high. There is however a vast difference between putrid meat and high game; it is suggested the difference is due to two distinct germs producing two distinct conditions.

Gentlemen, I now come to the conclusion of my paper. I have endeavoured to show that the Veterinary Surgeon is, by his education, the proper person to be the meat inspector; that, under our present system there is a wholesale traffic in diseased meat. Just one word as to the remedy for the evil, and I have done. Under the Food Adulteration Act, there are a few articles which the vendor may sell as a mixture, provided it is plainly labelled



as such; and it is incumbent also that he tells the purchaser, at the time of sale, that it is an adulterated article. Now if meat from sick animals must be sent to the market, I would compel the vendor of the carcase of every animal which was slaughtered, suffering from any ailment or disease whatever, to be labelled; and the label should state plainly the disease from which the animal suffered. This is all that is required, for there is not the slightest doubt that, where doctors and veterinary surgeons have hesitated, the public would at once decide, by having nothing to do with it, even if compelled to live on dry bread.

Mr. PARSONS remarked on the merits of the paper, and said that undoubtedly a vast amount of meat was offered for sale, and went away in a badly-diseased state.

Mr. CHASE referred to a case of Parturient Apoplexy which was slaughtered and exposed for sale with his sanction. The Medical Officer of Health seized the carcase and summoned the butcher. The magistrates, however, upheld his (Mr. Chase's) opinion and dismissed the case, much to the annoyance of the editor of the *Lancet*.

Mr. COLLINGS thought the severity of Rigor Mortis was an indication of the state of the animal before slaughter, and should always be taken great notice of.

Mr. HEATH said we cannot surpass the system of the Jews, viz., the inspecting of each animal separately before slaughter. He strongly condemned tubercular animals for food, and thinks the disease may be conveyed through milk. He quite agreed with the whole tenor of the essay. He thought all slaughter-houses should be officially inspected. He hoped the paper would be read by the general public, as well as the profession.

Mr. J. PENHALE was of opinion that the veterinary surgeon was the proper person to be the meat inspector. Tuberculosis, he considered, should be at once scheduled as a contagious disease. In Austria, animals killed for cats' and dogs' meat were immersed in petroleum to prevent their being afterwards eaten for food. He thought this system might be adopted with benefit in this country.

Mr. OLVER said undoubtedly all slaughter-houses and butchers' yards should be regularly inspected; but it would be difficult for the veterinary surgeon to carry out the law in its full severity in every instance. He did not go quite so far as the essayist, in the condemnation of the meat of animals slaughtered whilst suffering from slight ailments.

Mr. ROACH thought that where the flesh was solid and firm to the touch, and of the proper colour, it was an important indication of health, and in such a case there was no course open to the inspector but to pass it for food.

Mr. R. E. L. PENHALE remarked that the traffic in diseased meat was so extensive and general, that it would be difficult to stamp it out entirely. He was informed that animals suffering from disease in the country were often killed and sent to London under the name of cats' and dogs' meat, but the meat, when it arrived at its destination, if at all good-looking, was carried to the butcher's stall and sold for human food.

Mr. BURTON was of opinion that only a small percentage of animals were perfectly healthy; therefore he could not agree with the essayist in such wholesale condemnation. The line should, however, be drawn somewhere, for the consumption of animals suffering from Quarter Evil and the such-like, could not really be countenanced.

Mr. PENHALE, jun., was in sympathy with the whole gist of the paper, and the sooner the traffic in diseased meat was put an end to the better.

Mr. COLLINGS proposed, and Mr. HEATH seconded, a vote of thanks to Mr. Penhale for his paper, and at the same time expressed a wish that it might appear in the professional journals *in extenso*.

Resolved to hold the next meeting in Exeter in September.

After the meeting the members dined together. The usual loyal and professional toasts were duly proposed and responded to, and a very enjoyable evening spent.

W. PENHALE, *Hon. Sec.*

#### NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the North of England Veterinary Medical Association was held on Friday, May 27th, in the County Hotel, Newcastle-on-Tyne, the president, Mr. D. Dudgeon, Sunderland, in the chair.

*Present*: Messrs. Gofton, North Shields; Mitchell and G. R. Dudgeon, Sunderland; Temple, Chester-le-Street; Nesbit, Fence Houses; Awde, Stockton; W. Grieve, Blaydon; Wm. Hunter, Moore, Hancock, Gresty, H. Hunter, and the Secretary, Newcastle-on-Tyne.

*Visitors*: Professor McFadyean, Edinburgh; Messrs. J. R. Charlton, Newcastle; and Dotchin, student.

The minutes of the last meeting were taken as read.

Letters of apology were received from Professor Robertson and Walley; Messrs. McGregor, C. S. Hunting, jun., C. Stephenson, G. Elphick, Mulvey, Thomas Greaves, Foreman, Peele and Farrow.

Mr. D. DUDGEON proposed, and Mr. H. HUNTER seconded, that the annual dinner of this Association be held during the visit of the Royal Agricultural Society, and that Messrs. Dudgeon, H. Hunter, Elphick, Moore, Nesbit, Gresty, Gofton, Hancock, and the Secretary form a committee to make the necessary arrangements.

Carried unanimously.

Professor MCFADYEAN then read the following paper:—

MR. PRESIDENT AND GENTLEMEN,—I am proud to have the opportunity of appearing before this society to read a paper on "The Education and Examination of Veterinary Students." I do not intend to offer any apology for my own presence here, or for the subject I have chosen. I am not so foolish as to think that I could teach the members of this society anything. I may, however, be the instrument to direct your attention to a subject that must always be of interest and importance. It is not long since some of us were students ourselves, and the more recent that is, one can the better appreciate the claims of students to have a fair and properly-conducted examination. But apart from that, the progress of our profession is intimately bound up with the methods of educating and examining our students.

For the past four years—the period during which the present Board of Examiners has been in office—the results of the examinations have been such as to warrant the conclusion that there is something radically defective in connection with the present system of veterinary education or examination. The result of three consecutive examinations, taken at random during the period referred to, will illustrate the point. The aggregate number of students who presented themselves for the three consecutive examinations beginning with July, 1883, was 141, and of these only fifty-five, or less than forty per cent. passed. These figures embrace the total number of students from the two Edinburgh Colleges and the Glasgow College who presented themselves at these dates for the "final" examination. The results of these examinations are perhaps a little more adverse than the average of the whole period referred to, but it is within the mark to say that the proportion of rejections in the "final" examination has been more than fifty per cent. The figures given do not include the students who presented themselves from the London Veterinary College, the only other college in Great Britain, but the inclusion of these would not materially affect the result.



It is worthy of notice that this excessive proportion of failures came suddenly into existence with the present Board.

In searching for an explanation of this excessive proportion of failures, one might expect to find it in—

(1) A defective calibre of the students, either in mental capacity, or in respect of general education, which would prevent them from profiting fully from the training afforded at the veterinary colleges, assuming that to be up to the mark.

(2) Defective teaching at the veterinary colleges ; or

(3) A defect in the system of examination.

*Calibre of the Students.*—On *a priori* grounds this is not likely to afford an explanation, because veterinary students at the present time are drawn from the same sources as students of other professions. The students of the present day are drawn from a distinctly higher grade of society than were those of former times, and with this there is observable a marked advance in respect of general education. Besides, a preliminary examination in general knowledge of a uniform standard for all the colleges is now enforced by the Royal College of Veterinary Surgeons. Under this head may be noticed what might be suggested as an explanation of the high percentage of rejections, viz., that the students, although not defective in mental calibre or general education, are indolent and careless, and thus do not profit to the extent that they might from the teaching afforded at the colleges. But the teachers are alone able to say whether this is the explanation, and their answer is in the negative. Moreover, another consideration will prove that this cannot be the explanation. At all the colleges it is, I believe, the custom to refuse certificates to such students as have been indolent and careless, and such men are therefore seldom or never permitted to come before the Examining Board. I may here say, however, that teachers occasionally feel it difficult to carry out this rule, for sometimes a student put under this prohibition will appeal to instances where under the present Board men of very inferior calibre have fared better than their fellow students who were far ahead of them.

*The Teachings at the Colleges.*—It appears to me that there are two respects in which the teaching afforded by the veterinary schools of this country is defective, or, rather, there are two sets of circumstances that combine to render the teaching less efficient than it would otherwise be.

Firstly, there is the poverty of resources of the veterinary colleges. This entails evil in several ways. In the first place, the colleges are under-manned. For example, in each of them there is but one teacher for veterinary medicine and surgery. In other cases the whole time of the teacher is not devoted to the subject or subjects that he teaches, but is partly spent in practising the ordinary duties of our profession. Again, the salaries attached to many of the appointments—indeed, I may say to all of the appointments but one in each school—are totally inadequate to attract men of high general and scientific attainments. The bad effect of this is obvious. Teachers too often either hold their posts as bye-appointments, or they do not prosecute the study of their own particular branch as they would do if it were worth their while to devote their lives to it. It is too much to expect that there will often be found men who, from a pure love of the subject, sacrifice their chances of rising to eminence in veterinary practice or in some of the other professions. These facts are plain to anybody. What is their remedy? Will the time ever come when each staff will contain a teacher who will devote the whole time to investigating and teaching the morbid anatomy of the domesticated animals, when the teaching of veterinary medicine and veterinary surgery will be divorced, and when, moreover, there will be separate teachers for the diseases of horses, cattle, dogs, pigs, and sheep. The time may come, but I fear it

will not be soon. It appears to me that there are two possible methods by which our teaching staffs might be made, perhaps not perfect, but at least as competent as those of the best equipped medical schools in this country. If, for example, there were a reduction in the number of teaching colleges, the financial position of the others would be correspondingly improved. I mean that there would be money to found new lectureships, and to remunerate all the teachers so as to attract really good men for the various appointments; and in time even better men than the best that could be had now would be obtained, for young men would, from the outset of their career, make it their aim to qualify themselves by special study for such appointments. I fear, however, that to this advantage there might be a countervailing disadvantage, for the multiplicity of schools is not an unmixed evil. I am perfectly sure that if there had not been two rival schools in Edinburgh, the teaching would have been less efficient than it is at the present day. Some degree of competition and rivalry is just as good for teaching as for trade. I hope, for that reason, that there will never be fewer than two veterinary colleges in Great Britain.

Another method by which the schools might be put on a more satisfactory footing would be by the aid of Government grants. I think it is a reproach to the intelligence of stock-owners in this country that veterinary teaching has been left to its own unaided resources. However, at the present time the very fact that four veterinary colleges exist by their own resources would secure a certain refusal to any application for Government aid.

Another aspect in which the teaching of the college is, and must in the nature of things ever remain, defective, is in respect of clinical teaching. I think that to the student who is determined to avail himself to the utmost of his opportunities, the colleges furnish clinical material from which he may acquire a fair practical knowledge of equine diseases. Perhaps that is true of canine practice, too. It certainly, however, is not true of the diseases of cattle, sheep, or pigs. I know there is a class of men in the profession who regard a knowledge of the diseases of these last-named animals as of very secondary importance. In general that opinion is held only by those who have not that knowledge themselves; and since these animals constitute a far greater item of the national wealth than horses, it cannot be denied by any sensible reflecting person that a knowledge of the diseases of these animals on the part of the practitioner when he starts in life is of primary, and not at all of secondary, importance. To show how defective the resources of the schools are in this respect, I will illustrate how much clinical work in connection with cattle diseases a student may see during his curriculum in Edinburgh, and I believe he is as favourably circumstanced there in that respect as he would be in Glasgow or in London. I do not say he is any better. Or, perhaps, the best, as being the shortest and most forcible way of illustrating this is to tell what he will not see, and what from the very nature of things he can never be expected to see. Well, he never sees a case of Red-water, or Black-quarter, or Milk Fever, very few cases of Parturition, and few, if any, cases of stomach derangement. I say it is in the very nature of things that he should not see such cases, for either we never see such diseases in cities, or if they do occur the animal is promptly slaughtered. Here is a great patent defect in the teaching afforded by the schools. How is it to be remedied? Very simply. Let the student go for his lectures on those subjects to the practitioner, who has the material for teaching him. But, says somebody, that is just apprenticeship, which the schools have always persistently opposed. But it is nothing of the kind. By compulsory apprenticeship was meant in the first place a period of pupilage before a student had been grounded in the elements that he must know before he can take the benefit out of clinical work. Moreover, the very fact of prescribing a cut-and-dried



plan of apprenticeship would lead an intending student or his guardian to think that it was all the same where a pupil was apprenticed, so long as it was to a duly qualified practitioner. For example, suppose the apprenticeship clause had been sanctioned in the recent application for a Supplemental Charter, the men who would have had most pupils would have been the practitioners in London, and other large cities, the very men who are as short of variety in their clinical material as the colleges themselves. Let the student go to college and get grounded in the subjects of chemistry, botany, physiology, anatomy, *materia medica*. Let him, in fact, pass his first and second professional examinations. While he is doing this, let him during the intervals of session, amounting to four or five months in the year, go to the practitioner who can show him the clinical work that he stands most in need of seeing. If he is young, and has not been accustomed to animals, let him, after he has passed his second examination, arrange to go for a year with such a practitioner. Then let him return to college, and complete the prescribed period of study before presenting himself for the final examination. That is, I am happy to say, what a great many of our students are now doing. We seldom or never send up for his final examination a student who has not supplemented his collegiate studies by seeing clinical work with a practitioner. Some, however, do not follow this course, but rely solely upon the college curriculum, and I am bound to say that their average success at the final examination is just as great as with those who have taken the course that any one would think must have made them better qualified. I have known students, who had seen considerable periods of practice with eminent practitioners in both town and country, to be repeatedly rejected, while others of no greater ability or application, who had hardly seen a day's practice outside of the college, appeared to pass with ease.

I have now stated what weak points I see in the teaching afforded by the colleges. Very possibly, as being I may say inside a college, defects that are obvious to outsiders may be unseen by me. If so, the "candid friends" outside, of whom the teachers have generally enough, may be left to draw attention to those I have missed, and I will therefore pass on to inquire whether there are any defects in connection with the examinations as at present conducted.

Suppose that we had a clean sheet on which to draw up the rules and regulations for the appointment of the men who are to examine our students, I take it that we should regard it as a primary qualification for appointment as examiner, that he ought to have a thorough knowledge of the subject on which he is to examine. I can hardly conceive of any person denying that. Still, I am sorry—I am ashamed—to say, that I have known members of our profession, some of those whose voices are heard loud and frequent in our Council, to say that a special knowledge of the subject was not necessary on the part of veterinary examiners, or for that matter, I suppose, on the part of any examiner, and that any of us could by a little reading up examine veterinary students on such subjects as chemistry, botany or physiology. I could not say anything to convince any one who may hold such views as these. I will take it for granted that the proposition that I started with is unassailable, viz., that a special knowledge of the subject is an essential qualification for appointment as examiner. It used to be so regarded both in theory and in practice. Prior to the appointment of the present Board, we invariably had specialists to examine on such subjects as chemistry, botany, and physiology, and histology, and I reflect with pride on the fact that I was catechised on these subjects by men whose names are known over the civilised world for their scientific eminence. That I am sure is a sentiment felt by everyone here. Why, I ask, was the rule hedged round by any qualification to the

effect that a certain proportion of the examiners should be veterinary surgeons, and worse than that, why in future appointments must every examiner be a veterinary surgeon? Well, I can imagine only two replies that any one defending the recent charges might make. First, he might say the limitation is after all no limitation, for we can find just as eminent men in each subject inside our own profession as out of it. I say, I can imagine somebody saying that, but it is, I confess, a sketch of the imagination. Or, again, I can fancy some one saying—we may sacrifice a little in the way of special knowledge, and keep the good things of the profession for our own members. But will any one put the matter on so base a footing as that? Is the efficiency of the Examining Board, the interests of justice to the students, the interests of stock-owners and the dignity of the profession at large, to be jeopardised in order that a few pounds more may annually be directed to the pockets of some favoured ten or twenty members of our own profession? Let no one believe that this is a trivial matter. It is a vital matter. No man can be an efficient examiner on any subject unless he is competent to teach that subject, unless, in fact, he is a specialist on that subject. If an examiner is not a specialist, there is far greater danger of an ill-informed student getting through, and there is far greater danger of a brilliant student getting rejected. I could, from recent experience, give many forcible examples of both evils. There is overwhelming testimony that these things occur far oftener now than formerly. On the one hand, the teachers complain that they cannot now be sure of their best students getting through; on the other hand, it is said by outsiders that incompetent men are being licensed. I believe both statements to be true. Is it not a tremendous injustice that a student who answers according to the teaching of his college should get no credit for his answer, and perhaps be relegated to a long period of further study because there is a conflict of opinion between his teacher and the examiner? I do not say that the teacher is bound to be right, but he is surely as likely to be right as the examiner, since in nearly every case the teacher is a specialist while the examiner is often not.

But the evils that I have indicated as likely to follow the appointment of examiners who are not specialists are not the only evils. The system tends to degrade the teaching. For example, I have regularly in teaching my own class, while showing them how the horse's body is constructed by nature, to advise them to reply otherwise to please the examiner, and I know that my colleagues have to do the same. This is a matter about which I am determined to cry out, and for what I have already done in that way I have been called no end of bad names. But by-and-by those who are so irate may begin to see that the use of bad names is not argument. I have not yet solicited from those who defend the present system a statement as to where my contention is wrong. I want them to state—I mean I want these examiners to state—for it is they who are the champions of the system—whether they take up the ground that they *are* specialists in the subjects in which they are examining, and if so, by what method they made known to the profession that they had a special knowledge of such subjects. For example, I ask, is Mr. Augustus Taylor a physiologist? Is Mr. Walters a botanist? Is Mr. Banham a pathologist? Or is Mr. Vaughan a chemist? I put it to this assembly of members, did any one of you know—and you had the ordinary channels of information on such subjects—did any of you know, prior to the date when these gentlemen were appointed, that they had any better qualification for appointment as examiners than one of yourselves? Had any one of them published a single original observation on any branch of the subject that he was appointed to examine on?

Take again the subject of anatomy. I have said publicly and privately



and I shall continue to say it as long as I live, however much I may be vilified for it, that I have a right to demand that my students should be examined by a practical and not a mere theoretical anatomist. Is that a crime, or is it even an error? Am I claiming a favour, or something that would promote my own interests to the detriment of the profession? Would it not, on the contrary, be the best guarantee that I should teach thoroughly and practically? I have been given to understand, however, that I must not say that any more, and in punishment for having publicly said it Mr. Fleming has decreed that I am in future to be excluded from the privilege of hearing my own students examined. Somebody, apparently, has deluded Mr. Fleming into the belief that he is an anatomist. Well, I respect his opinion, but I join issue with him; for I maintain that to be an anatomist one must devote one's self wholly or mainly to the practical study of anatomy. I suppose in the same way Mr. Fleming is a surgeon, a physician, a pathologist, and an obstetrician.

The next grave defect that I wish to direct attention to in connection with the constitution of the present Board of Examiners, is that general members of it hold double appointments. Now, that is a thing so pernicious and indefensible, that I think I should be justified in saying that it is a scandal and an act of jobbery, against which the profession should make its protest heard. Can any one explain why such a thing was done? Why does Mr. Vaughan examine both on comparative anatomy and on chemistry? And why does Mr. Fleming examine both on anatomy and pathology? Will anybody dare to say that these gentlemen were appointed to the double posts because there was nobody even inside the veterinary profession equally competent to examine in at least one of these subjects? Now, suppose we bring up the one argument that has even been advanced in favour of reserving these appointments for members of the veterinary profession—is it fair—is it seemly—that one man should, when there are so few good things, take two all to himself? I do not for a moment intend to impute any unworthy motive to any of the gentlemen holding these double appointments, and drawing double fees. I will concede that they accepted them from the honourable belief that such good men as themselves could not be found if they refused. It will, however, surprise me very much if the body of the profession stands that kind of thing much longer.

A third defect in the present Board is that, in the majority of cases, there is only one examiner to each subject. What can be the reason for such an arrangement? It cannot be because any one contends that there is likely to be more efficient, or as efficient, examining with one examiner as with two. Perhaps you think it is on the ground of economy. Let us see. From the annual report furnished to each member of the profession a month ago, it appears that during the past year the Board examined 716 students at a cost in examiners' fees and expenses of £1,575 1s. 8d. Was not that a most enormous sum to spend on the examination of such a number of students, and with only twelve examiners? Truly it is a fine thing to be appointed a veterinary examiner. Suppose you divide £1,575 by twelve. That gives about £130 to each examiner. But remember the double appointments. I think I am within the mark in saying that Mr. Fleming's own share of that is nearer twice £130. How does that square with the economy theory? This is a subject upon which I have made some inquiry, with the view of finding out the comparative cost of examining other students. Here is an illustration. In the Faculty of Medicine in the University of Edinburgh—the greatest medical centre in Great Britain—the examiners are paid a fixed salary of £75 per annum. For this sum each examiner examines about 500 students. He subjects them, not merely to oral examination such as our students get, but he has also to examine a written paper which the student takes two hours to write. I may

add that these appointments are among the most coveted honours of the medical profession, and that the most eminent men in London, Manchester, Dublin, or elsewhere, are proud to get them. Now, surely, what is sufficient remuneration for the most eminent specialists of the medical profession, might suffice in the case of our examiners. But apparently no. Honour with us is counted no remuneration—all must be in hard cash. But seriously, gentlemen, does not this amount to jobbery? How long will the profession countenance such a scandal? Will it not speak out, and insist that the full complement of examiners—two to each subject—should be appointed as it used to do?

The last defect that I am going to mention—the last that time will allow me to speak of—is this: It appears to me to be a very unsound principle that an examiner should be also a member of Council, and for this reason, that it makes the Examining Board, in a sense, an irresponsible body. Theoretically, of course, the Board is responsible to the Council. But take the present time. Out of the six members on the final Board four are members of the Council. In any case where it became necessary to review the conduct of these examiners at the Council, the influence of these four men (and to say that they will support their own interests is to say that they are human) would generally be enough to carry the vote. The teachers have been told lately that the proper place to direct their complaints to is the Council. An excellent arrangement, no doubt, to enable the examiner to administer a snub to the teacher who impeaches him. And there are yet other objections to examiners retaining their seats at the Council Board. For example, when the time for the election of a new Examining Board comes round the influence of the examiners in the Council may be exerted for months beforehand to secure their own re-election, although equally, I will not say better, qualified men may be candidates for the appointments. No one can deny the force of this objection except on the ground that the present constitution of the Examining Board is perfect, and that therefore there can be no need to suggest any alteration that might conflict with the interest of those at present holding office, or that those who at any time may have a seat at both the Examining Board and the Council Board will be above the commonest frailty of human nature, what is more true than that

“ When self the wavering balance shakes,  
It's rarely right adjusted.”

I have very good reason for believing that already every influence that the present examiners, who are members of Council, can bring to bear is being put into force to secure their own re-election; and I know that it was by their influence that every effort to amend the present Board since its appointment has been frustrated.

And in this connection I am tempted to ask: Is the profession going to be contented with twelve examiners where there ought to be twenty, and with an arrangement that appears likely to make these examinerships virtually life appointments? It ought to be a great and a much coveted honour to be appointed one of our examiners, and if so why is this honour not allowed to circulate? Judging from the experience of recent years, one might think that we had just one man who was fit to fill the office of President, that there were in all the profession just twenty-four men fit to act as members of Council, and that on some subjects there is just one individual among our whole number who is competent to examine.

And now, Mr. President and gentlemen, I am going to stop. I am proud to have had the opportunity of addressing you. On many of the points I have raised I have spoken strongly because I feel strongly. I have no reason, however, to expect that everyone here will take just the same view as I do,



and if any one thinks that I have advocated anything, or said anything opposed to the best interests of our profession, I hope he will use his right to speak as freely as I have used mine.

A good discussion followed, in which most of the members took part, and it was unanimously agreed to forward the following resolutions to the Council of the Royal College of Veterinary Surgeons, that this society is of opinion—

1st. That the number of examiners should be increased to at least two for each subject.

2nd. That as far as possible each examiner should be a specialist in the subject on which he examines.

3rd. That the examinations should be both written and oral.

4th. That in no case should one man examine on two different subjects.

5th. That in the event of a member of Council being appointed an examiner he should resign his seat at the Council.

6th. That the examiners be paid at a fixed salary, irrespective of the number of students examined.

Mr. G. R. DUDGEON proposed, and Mr. MITCHELL seconded, a vote of thanks to Professor McFadyean, which was supported by Messrs. Gofton, Moore, and Hancock, and carried unanimously.

Mr. MOORE proposed, and Mr. H. HUNTER seconded, a vote of thanks to the Chairman, which brought the meeting to a close.

## NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE above Society held their half-yearly meeting on Wednesday, February 23rd, at the Bell Hotel, Norwich, the President, C. A. Banham, Esq., Cambridge, in the chair.

*Members present.*—Messrs. Auger, Gibson, Golden, Gooch, Hammond, Howard, Newson, Overed, Santy, Shipley, Urquhart, and Wragg.

*Visitors.*—Colonel Combe, Lieutenant Welsh, Messrs. Pilling, Rowe, and Rutherford.

Apologies from several members and friends regretting their inability to be present were read.

### *Election of Officers for Ensuing Year.*

Mr. SANTY proposed, and Mr. NEWSON seconded, that Mr. W. Shipley (Yarmouth) be elected President for the ensuing year, which was carried unanimously.

Messrs. Santy, Banham, and Wragg were elected Vice-Presidents.

The Secretary having sent in his resignation, in consequence of pressure of business not allowing him time to fulfil the duties,

Mr. OVERED proposed that the resignation be accepted, and that a vote of thanks be accorded to him for having undertaken the duties so long.

Mr. SHIPLEY seconded the motion.—Carried unanimously.

Mr. SANTY proposed, and Mr. OVERED seconded, that Mr. Urquhart be elected Hon. Secretary.

### *New Members.*

Mr. Urquhart—proposed by Mr. SANTY, seconded by Mr. OVERED.

Mr. Francis Golden—proposed by Mr. SHIPLEY, seconded by Mr. OVERED.

The next meeting was arranged, on the motion of Mr. BANHAM, to be held at Yarmouth.

*Presentation of a Stained-glass Window to R.C.V.S.*

MR. SANTY proposed, "That this Society join with the West of England, Southern Counties, and the Lincolnshire Societies to raise the sum of £60 for the purpose of presenting a stained-glass window to R.C.V.S., as a memorial of these four Societies." For this purpose he proposed that this Society grant a sum not exceeding £15.

MR. OVERED, in seconding the motion, reminded the members that it would be unwise to commit themselves too far; but after being informed that their share would only be £15, he thought the Society could well afford that sum, especially for such an object.

MR. BANHAM, in supporting the motion, said that it was not only beneficial to decorate the new home, but he thought those who would probably use it most were the members who lived nearest London, and consequently it was more their duty to undertake this work than any others; he should therefore have great pleasure in giving the proposition his most hearty support.

*Vote of Confidence in Existing Examining Board.*

MR. WRAGG said he had no doubt but that most of the members had heard of the scandalous behaviour of the students of the Old (Dick's) College at Edinburgh during the late examinations, and he wished the meeting, if they thought fit, to pass a vote of confidence in the Examiners. He therefore proposed, "That in the opinion of this Society it is necessary that the Council of R.C.V.S. should do all in their power to protect the Examiners from such insults and violence as they were subjected to in Edinburgh, and also that this meeting passes a vote of confidence in the existing Board of Examiners."

MR. SHIPLEY seconded the proposition, and thought that the conduct of the young men at Edinburgh was anything but creditable to aspirants to the veterinary profession. That they had any reason for behaving in such a manner, he did not for a moment believe, for more generous and kindly-disposed examiners could not be found than those which constitute the present Board.

MR. OVERED, in supporting the resolution, said he thought that our officials should be protected from insult and injury. Theirs was, no doubt, an unpleasant task, and one which required firmness and accurate discrimination; but that any of the present members did more than exercise their powers in the right way, he could not believe. He regretted, for Professor Walley's sake, that such a procedure should have taken place, for he believed that gentleman was a true friend to the profession and wished for its welfare.

The resolution was put to the meeting, and passed unanimously.

*Post-mortem Specimens.*

MR. FRUNER, of Clare, sent a dried specimen of an urinary bladder taken from a mare who, to all appearance, during life never suffered any inconvenience from its malformation.

The specimen presented formed two distinct bladders, opening by separate mouths into one outlet, one of the sacs having a small saccula projecting from it. The members said they had never seen such a malformation before.

MR. ROWE, of London, exhibited a tumour which he removed from the mamma of a bitch a few days previous, the only thing remarkable about it being its size and weight.

MR. OVERED exhibited a portion of the cuticle which became detached from a cow he believed was suffering from *Purpura Hæmorrhagica*. The inner side was stained here and there with bright scarlet patches, varying in size from specks to one-and-a-half inches in diameter. One piece was at least a foot square, and several smaller pieces. It resembled what would be expected to follow upon the application of a severe blister.



Mr. RUTHERFORD then read the following paper on

SOUTH AFRICAN "HORSE SICKNESS."

MR. PRESIDENT AND GENTLEMEN :—Permit me to thank you for the honour you confer upon me in allowing me to bring forward the following paper on a subject, which I am afraid is meagre in detail, and of but little interest to practitioners here, but which I hope may be of some use in enlightening our ideas upon the subject, by evoking some discussion.

Understand that "Horse Sickness" is a term applied to different forms of a certain disease occurring in that country ; not to diseases in general.

It is thought by many people to be a disease or curse special to South Africa—one of the Egyptian plagues handed on to posterity ; and in consequence they look upon it as something to be borne without complaining, or without even trying to adopt preventive measures, so frequently laid before them by Mr. Wiltshire, Colonial Veterinary Surgeon, Natal, and by others—measures which might save many a valuable life. That it is a specific fever of an anthracoid type I have not the slightest doubt, and the course of the trouble points to it being Anthrax Fever.

Mr. Wiltshire has found the characteristic *Bacilli Anthracis* in scores of cases in the spleen and blood of horses affected, and in certain exudations common to that trouble. Symptoms and *post-mortem* appearances point to it being of an anthracoid nature, bearing much the same relation to Anthrax Fever proper, that some of the forms of symptomatic Anthrax do.

Many early and modern writers have described Anthrax, a disease known in Asia Minor during the siege of Troy ; in the early and middle ages in Great Britain, men, horses, and cattle, suffered from it. In France millions of francs were lost annually by the scourge ; and as "the dreaded 'Jaswa,' it appears periodically in Russia and Siberia, where it decimates so many troops of horses and herds of cattle, that military force has to be employed to form cordons around infected centres, and to carry out precautions to prevent its spread." Extracts from "Sanitary Science and Police" (Fleming). In Germany and India it is common, going by the name of Miltzbrand in the former, and Loodiana in the latter country.

It occurs in every country, polar and tropical, and attacks both wild and domesticated animals. In England, I believe, a few cases occur annually amongst horses in one or more counties ; and Splenic Fever is not uncommon amongst cattle. English, Syrian, and other Eastern horses imported into Egypt during the war of 1882 suffered from it ; and it is known all over South Africa, attacking old and young, both sexes, and all breeds of horses and mules, whether colonial or imported. Numbers of men die yearly from it in Russia, owing, I believe, to their being inoculated whilst handling infected carcasses ; and in England we meet with it as Malignant Pustule amongst wool sorters.

The world has been startled within the last fifteen years by the important discoveries as to the origin and transmission of Anthrax, made notably by Pasteur, Koch, Toussaint, Greenfield, Burdon-Sanderson, and others, who have shown that Anthrax results from the presence in the system of the *Bacilli Anthracis*, organisms which upset the equilibrium of the blood to a more or less marked degree ; and that the amount of alteration of the blood and localisation of the poison (if I may use the term) depend upon the degree of virulence of the bacilli, and the method of inception.

It has been clearly demonstrated by Pasteur and Tyndall that germs of different sorts, the *Bacilli Anthracis* amongst them, float about in the atmosphere in clouds, are found in water in a state of suspension, and that germs are much more prevalent in the air of some places than of others ; also that some of those floating in the atmosphere are in a partially developed or dormant

state, in which they are capable of remaining for a certain time until placed under favourable circumstances for germination, whereas those found in a watery medium are in a more advanced stage of development. The *Bacilli Anthracis* belong to the latter class, a moist medium suiting them best as a habitation. How long the *Bacilli Anthracis* can exist in the atmosphere and how long they remain virulent whilst there, I have not heard stated. Millions of germs of different sorts are diffused through the atmosphere in a state ready for inception, and yet man and animals are not constantly suffering from the diseases they produce, but only at intervals of time.

Formerly it was a much disputed question whether different organisms found in the blood or tissues of animals affected with certain specific diseases were the cause or effect of the disease; but now it is admitted by all scientists that certain organisms are the cause of certain diseases of a specific nature marked by their presence.

The *Bacilli Anthracis*, placed under favourable circumstances for their germination, undergo certain changes of life; the rods become actively motile, then some of them cease moving and become lengthened out into thin filaments, which, in turn, divide slowly into segments, the latter developing spores; and so the metamorphosis goes on, the spores becoming rods. It is a curious fact that, during the life of the host, the production of spores does not take place (simple multiplication by fission of rods only), but that on death of the host or emanation of adult bacilli from that body, spore formation is at once established. The rate of development, regulated by the amount of heat under natural conditions external to an animal's body, is from five to seven days.

To be concise the *Bacilli Anthracis* require for their development from pre-existing bacilli in a soil suitable for their germination—

1st. Moisture.

2nd. Carbonaceous and nitrogenous matter, *e.g.*, decaying vegetable and organic matter such as a manure heap, a stagnant pool or marsh, combined with a certain amount of heat—conditions which can be replaced by certain saline solutions in artificial cultivations.

3rd. A supply of oxygen.

4th. A temperature between 10° and 63° Fahr. for reproduction (Howarth); and from 10° to 112° Fahr. for persistence of vitality (Cohn).

But bear in mind that the spores are extremely tenacious of life and vitality, and are capable of withstanding a temperature of 91° Fahr. below freezing point, intense heat for a certain length of time, and many chemical substances which one would think powerful enough to destroy them at once.

Professor Tyndall believes there is a period of latency between the germ condition and the adult state during which the adult bacterium may be destroyed by a low temperature or ordinary heat.

The spores are the active means of contagion.

How the bacilli kill an animal is still an unsettled point: some say they rob the blood of its oxygen, and thus paralyse the lungs by producing carbonic acid poisoning; others that by blocking up the pulmonary capillaries they produce death by coma and asphyxia; and a later theory is that the bacterian excretions prove poisonous.

That Horse Sickness is a soil-developed disease I am certain, and the same opinion was acted upon by Mr. Lambert (whilst acting as Principal Veterinary Surgeon to the forces in Natal, during the Transvaal War of 1881), by Mr. Duck, A.V.D., and Mr. Wiltshire, V.S., Natal.

Natal is said to have lost over 3,000 horses during the hot season of 1885-86, and somewhat less during that of 1879-80. In some years the disease is rife and very virulent all over the colony, in other years but few



cases occur; sometimes it is most prevalent along the coast or in certain districts large in extent, whilst at other times it is much more prevalent and more virulent inland and on the high "veldt" than at the coast. It may well be asked "why should the prevalence of this disease vary so in number of cases and in virulence year after year in different tracts of the country"? May it not be that surrounding circumstances at times alternate and vary, by which the degree of virulence of the poison is regulated?

Horse Sickness is most prevalent during the warm, wet season, *i.e.*, from December to March, abating as the dry season sets in—a season in the uplands or high "veldt" accompanied by intense cold, frost, and sometimes snow. The steady rains of spring (November, December, and January) appear to be the agents that rouse the Horse Sickness germs to activity. Though it abates considerably during the dry season it is by no means entirely checked—several cases occurring yearly during the colder weather, and more especially on the coast. It is usually more prevalent along the coast than on the high "veldt" inland of Natal and the Transvaal; but the same cannot be said of the other side of the South African colony, for, in most seasons, it rages in Bechuanaland—a country about 700 miles inland from Cape Town, and some thousands of feet above sea level, but which is flat, has no well-marked water shed, and is full of swamps during the wet season.

It may be asked "why do so many horses and mules in South Africa suffer and die from Horse Sickness"? Admitted that the disease is Anthrax, it may be readily understood why it is such a dreaded disease and so fatal, if you bear in mind that nearly all horses and mules graze most of the year (excepting a very small percentage stabled in towns and fed on dry grain), many of them night and day, and all the year round, and that Horse Sickness is a soil-developed disease. Anthrax is much more common in those countries marked by a predominance of malarial soil than in hilly countries; is more prevalent in wild districts than in those subjected to drainage and cultivation; and the same can be said of Horse Sickness in different parts of South Africa. Around Cape Town "Horse Sickness" is very rare now, no doubt owing to drainage and cultivation. The same fact is most forcibly impressed upon us in relation to Anthrax in England, some parts of France and Germany, in which countries some districts where Anthrax was formerly a constant and dreaded guest have been freed from it by thorough drainage of swamps and marshes.

As is well known, horses, and more particularly mules, always try to get at the green grass of low-lying ground when out grazing, especially in the dry season, and so run a greater risk of being contaminated than when they are kept on high, healthier ground. Most colonists, the Dutch in particular, hold that the disease is due to miasma, and they consider their horses safe if they be kept from grazing till the sun is well up and the dew off the grass—a practice I have not found of much use, if any, nor have they. I am positive that horses and mules suffer more often from this trouble, as a result of injudicious grazing, than they do from the presence of the germs of the disease in the mist or vapour arising from the ground. Mules when allowed to graze have always suffered more than horses, owing to a great extent, in my opinion, to their wandering propensities and to their persistency in grazing on the green grass of any moist place (swamp or otherwise) or little valley—it being difficult to keep pig-headed mules in a herd on high ground if there be any greener grass near, for which they have naturally a preference. I don't say that all the "vleys," valleys, swamps, and low-lying ground in South Africa are contaminated and sources of the germs of Horse Sickness, but many are, without doubt. Certainly soil on which water lies stagnant for months, such as swampy flats adjoining sluggish streams and near the main

roads, are to be looked upon with suspicion. Water in itself, if flowing at a fair rate, and in a good stream, has been found safe. There are many means by which low-lying places may, and do, become infected. On the open "veldt," animals which have died are not, as a rule, buried by the owners, be they farmers or travellers—only in towns do they bury or destroy carcasses—but are left to rot where they fell; so that centres of contagion are common all over the country, even by the roads, where horses have lain that died from Horse Sickness. The grass and soil round about the carcase become impregnated with millions of bacterial germs, (if that soil be favourable for their multiplication and development), which in turn are washed down to low-lying places by the rains; so that it may be readily understood how certain tracts of country, swampy valleys at the coast especially, come to have such a dreaded name for Horse Sickness. Of course certain spots on dry, high ground are not safe, if animals which have died from Horse Sickness have not been buried deep in that ground and with proper prophylactic measures, or perhaps not buried at all. Places where animals stood whilst suffering from this disease, on high ground or low, become infected, and may remain so for years—the excreta, froth, etc., being charged with *Bacilli Anthracis*—if the soil on which deposited be favourable for their germination. Certain spots of ground near Fort Napier, Maritzburg, are examples of the above.

Time will not allow me to relate many cases to show that this disease is soil-developed, and much more often, if not invariably, contracted from grass containing the poison than from miasma. If the germs producing Horse Sickness be present chiefly in the mist or dew, as many people maintain, why is it that nearly all horses inhaling that mist during the night or day do not fall victims, whether they be under cover or not? Supposing that 400 or 500 horses are picketed on lines in a valley, known or suspected to be a fertile source of Horse Sickness, and that the vapour rises from marshy ground close by, all the horses breathe it, and yet it is found ten days afterwards that only a few, if any, are attacked with the sickness. On close enquiry it is found that many of those affected with the disease broke loose from the lines ten days or so previous to their falling sick, others were allowed to graze at some forbidden place, or watered at a stagnant pool near which were bodies of animals which had died from this disease.

In many districts owners stable their horses at night and turn them out to graze anywhere during the day—on boggy or marshy soil, and even on ground where numbers of dead horses are lying, many of which died from Horse Sickness. The owners had no idea of preventing their animals from grazing on the marshy soil (or on the infected ground where naturally they go for grass in the dry weather, and on which the germs of disease are just as plentiful during the day as at night. They reason "that the grass is nice and green, and as there is no moisture 'apparently' rising from the marshes, the horses must be safe." This is notably the case at Vryburg and other places in Bechuanaland, where the people ascribe the disease to miasma. At the places mentioned the troops in 1885 lost very few, compared with the losses annually, and at that time suffered by the inhabitants.

*(To be continued.)*

#### LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this association was held in the Medical Institute, Hope Street, on May 13th, the President (R. C. Edwards, Esq.) in the chair.

There were present :—Professor Robertson, Messrs. Briggs, Dobie, Davies, Faulkner, Ferguson, Greaves, Hughes (Oswestry), A. Leather, Locke,



Mitchell, Taylor, J. Welsby, W. T. Welsby, R. Welsby, Whittle, W. Woods, jun., Wolstenholme, and the Secretary. Letters of apology were read from Professors Williams, Walley, and McCall, Messrs. J. S. Hurndall, Smart, and Storrer.

Mr. R. S. Mitchell, M.R.C.V.S., Old Swan, was nominated for membership. After the usual preliminary business, the report of the Election Committee was read and adopted.

After some discussion anent the Edinburgh riots, the following resolution was proposed and carried:—"That this Association supports the council of the R.C.V.S. in its determination of appointing an independent conjoint committee—that is to say, the council to appoint a certain number of gentlemen who are neither teachers, examiners, nor members of council, to act with a certain number of gentlemen appointed by the Corporation of Edinburgh, in making a thorough investigation as to the cause of the late riots in Edinburgh."

The PRESIDENT then called upon Professor Robertson to address the meeting. The Professor spoke as follows:—

#### REMARKS UPON SOME OF THE MORE COMMON DISEASES OF THE FACIAL REGION AND OF THE MOUTH OF THE HORSE NECESSITATING SURGICAL INTERFERENCE.

From having frequently observed that the subjects brought forward for discussion at our association meetings have failed to elicit a full and free expression of opinion, I have to-day selected for the subject-matter of consideration one which, from the extent of material embraced, as well as the frequency with which all must have encountered several of the disturbances in this group of disease, cannot fail, I believe, to yield all of us benefit through the interchange of experience and opinion.

In the observations which I will make in introducing for your consideration certain surgical diseases affecting the face and mouth, I do not propose taking cognisance of all which we may have met with, or which may reasonably be expected to be encountered over a lifetime of practice, but only such as are more commonly observed, and consequently more important.

The entire number of these affections is so far peculiar that the structures chiefly invaded are the sclerous—the bones and teeth—in connection with which destruction and reparation are carried on somewhat differently from their course in softer parts. Both from frequency of occurrence and importance of attendant sequels, I would direct your attention to the subject of *operative interference in connection with the facial sinuses and nasal cavities*.

The cavities formed by or in the bones of the face and cranium which give form and bulk to the head, without proportionately increasing its weight, are liable to suffer from disease, both of a general character and from such as may more truly be regarded as local disturbance.

These cavities, although more or less completely separate and distinct through the intervention of bony or membranous septi, possess at the same time the common characters, (*a*) of being lined with a modification of the common nasal membrane; (*b*) of possessing one common communication with the outer world through the middle meatus of the nose. In health these cavities, in addition to air, small quantities of mucus, the product of the lining membrane. In disease unnatural collections of matter frequently call for surgical interference in order to secure its removal.

This state is encountered (*a*) in cases of chronic catarrh, (*b*) where irritation from teeth fangs or opposing and overgrown teeth induce inflammation and pus formation in the sinuses, (*c*) from local disease of bone tissue and mucous membrane, common and specific.

*Symptoms.*—The early indications of the existence of unnatural material in these cavities varies somewhat, depending upon the original cause.

When accompanying chronic catarrh the most obtrusive and constantly present, is the intermittent discharge of muco-purulent material from one or both nostrils. When proceeding from direct irritation in connection with disease, irregularity of teeth, or from local bone-disease, there may be difficulty in mastication shown by quidding of the food, holding of the head to one side, and increased salivation. In a few instances swelling with pain on percussion or manipulation over the region diseased may be distinctive, while in all of any time standing there will be swelling and infiltration of the glands and tissues in the submaxillary region. With the majority the nasal discharge, although constant, is augmented when the animal is exercised or when the head is held in an elevated position and immediately depressed.

Where the quantity of the contained material is considerable, or where the consistence is that of semi-solid, which is not uncommon, more positive evidence may be obtained by percussion or through exploration of the suspected sinuses by boring a small hole through the outer bone shell.

It is not, however, the mere fact that the sinuses contain matter which alone warrants us in resorting to trephining; a steady discharge may exist without any accumulation, while this may be arrested by the direct application of agents to the membrane, which cannot be done so effectually as exposing them from without. When satisfied that foreign matter is contained in these cavities, or that the nasal discharge is dependent upon an atomic or other disordered state of the membrane, which other measures have failed to rectify, the operation of these may be carried out with reasonable hope of success. This trephining, it must be remembered, is, in many instances, merely treating certain symptoms, the conditions upon which these repose must ever be present to our minds, if we would obtain permanent restoration of health, *e.g.*, constitutional weakness following certain fevers, or local irritation from teeth-disease. The sinuses which most frequently require our interference in this manner are the frontal and the maxillary, both being frequently involved at the same time. The former of these is most successfully opened, both for simple accumulations of matter and for disease of the lining membrane, at its greatest depth, which, for all ordinary purposes, is determined by means well enough known to all. With the latter we have to remember that the sinus is divided by a more or less perfect septum into a superior and inferior portion. To open the superior portion, we select a spot two inches from the terminal portion of the zygomatic ridge and one inch above the ridge itself.

By trephining one inch from the termination of the ridge and the same distance from its spine, we are generally able to obtain entrance to both superior and inferior sections, being directly over the partition between these; this is frequently what is aimed at, seeing the material to be discharged may be contained in both cavities. The operation of either or in both of these situations may be carried out standing, but is generally more conveniently done when the animal is cast. Before employing the trephine to remove the portion of bone it is needful either to make a crucial or a V-shaped incision through the skin, so that it may be reflected and the underlying connective tissue removed, or the same object may be obtained by removing entirely a circular portion of the skin large enough to allow the trephine to work clearly. The latter method I prefer as offering less chance of trouble in future dressing which the granulating edges of the skin-flaps are likely to entail. In no cases where this has been carried out have I been troubled with want of covering and healing over the original bone wound. When the skin has been reflected or removed it will be found advisable to drill a hole with an appropriate gimlet through the outer shell of bone,



thereby securing a stationary point in which the centre pin of the trephine may work, so facilitating the cutting of the instrument. The trephine which I have found most efficient is one suggested by Mr. Mannington, Brighton, having a movable centre pin slightly curved and roughened on its concave surface, which assists in preventing the detached portion of bone from falling into the cavity of the sinus.

In the case of the maxillary sinus when cut over the partition between the superior and inferior divisions, it may be found needful, even when the shell of bone is perfectly cut through, to use the elevator to raise the edge of the detached portion, so as to separate it from the connected septum. Having opened the sinus or sinuses it is generally needful to wash them out thoroughly by means of a syringe and tepid water, to which has been added some disinfectant; this washing is better carried out after the animal has risen from the operating bed, the chances of choking being in this way greatly reduced. This process must be continued daily or on alternate days until we are satisfied that the foreign matter has been entirely dislodged or the orifice closed. The complete discharge of the accumulated material, when of a firm consistence and of long standing, is always difficult, and in some impossible, because of its collection in the crevices of the bones; to avoid, if possible, this undesirable condition, trephining, at different points by which the contained mass may be broken down, is to be recommended. This with steady fumigation and syringing would succeed where a single opening would fail. One of the more recent cases of this sort which has come under my observation was trephined in five different places over the one side of the face, the discharge ultimately subsiding; nor were there perceptible blemishes, although in every case the trephining was done by the removal of the skin and by the use of the  $\frac{3}{4}$ -inch trephine.

When the continued nasal gleet is dependent upon an atomic and unhealthy state of the membrane lining the sinuses rather than on collections of matter there, general treatment ought to accompany the local, for the proper application of which the operative interference has been carried out.

In all instances where, in addition to the presence of matter in the sinuses or apart from it, disease of the bone tissue exists, the operation of trephining is not likely to be of much benefit.

Here the exudation from the inflammatory action, common or specific, by gradually incorporating itself with the minute structure of the bone, produces swelling, extending and gradually changing the physical character of the parts, frequently to such an extent that the entire bone structure, from infiltration with a gelatinous or oily material, or calcareous matter, becomes unnaturally softened or hardened. When gelatinous and fatty changes occur in the bone tissue there is generally a corresponding alteration in the lining membrane, and filling of the cavity with a varying coloured putty-like material, which, through bulk, pressure, and association, induces obstruction of the nasal chamber, with alteration in the nasal septum and turbinated bones. Under these conditions, trephining the nasal and turbinated bones may afford relief; rarely, however, do we meet with perfect recovery, particularly if the bone element is itself diseased.

When matter is contained in the convolutions of the turbinated bones, the ultimate result is generally more favourable. In such cases I have found that the preferable method is that of trephining the nasal bones at the superior part of the latter, by which facility is afforded for thoroughly washing the convolutions and nasal cavities, which otherwise is not well done. The most of these cases, if not relieved, are early incapacitated for work, although a fatal termination may be long delayed. This operation, when

fairly successful, whether carried out with a view to remove unnatural collections of matter in the sinuses or to promote a healthy condition of the lining membrane, I have not found to be very liable to require repetition by return of the conditions which first demanded it. As already noted, where the bone elements themselves are involved, neither amelioration of symptoms nor ultimate restoration to health are probabilities like to occur, consequently cases exhibiting this are better dealt with apart from operative interference.

*Nasal Polypi.*—These unnatural growths of a muco-fibroid character, situated in different parts of the nasal chambers, and directly connected with the membrane of the walls, or with the turbinated bones, although not very common, are still often enough encountered to attract notice, while from their position, as well as bulk, they are sources of annoyance. Their existence is determined (*a*) by the snuffling or vibratory character of the breathing, (*b*) by detection with the eye when the horse's head is held in a favourable light. In some instances their presence may cause a watery or muco-purulent discharge. Their removal is not usually a serious or difficult matter, provided it is possible to seize them with torsion forceps, or to pass the chain of an ecraseur over their bodies and gradually twist or divide the pedicle. Having accomplished this, a little fumigation or spraying of the cavity with an astringent antiseptic will be sufficient to restore the parts to a natural condition. In exceptional cases it may not be possible to reach these growths without trephining the bony walls of the cavity, and the exercise of considerable manual dexterity in seizing and retaining hold of the unnatural growth.

*Dentiferous Cysts and Tumours.*—Cavities lined with a more or less perfect membrane, and containing teeth or masses of dentiferous material are occasionally encountered, particularly in connection with the maxillary and temporal bones. Both of these conditions may exist for lengthened periods, and apart from their obvious swelling and disturbance of regularity of form, they do not interfere with the animal's usefulness.

They usually attract notice and demand treatment by having their boundary membranes broken, and through the establishment of a communication with the outer world, induce an irregular discharge of purulent or sanious matter.

The only chance of arresting this disagreeable discharge, and restoring the parts to a healthy state, is the removal of the dentiferous growth, or in the case of the cysts, of the abortive teeth.

*Sebaceous Cysts.*—These are chiefly found in connection with the lining membrane of the false nostril; they frequently attain a large size, are filled with mingled sebaceous and mucous matter, it may be epithelial cells and hair, and are objectionable from their unsightly appearance more than from impeding respiration.

Their treatment, which consists in laying the cavity open from the inner surface of the pouch, and washing it with some mild astringent, is generally successful in securing their removal.

*Affections of the glands and ducts of the mouth connected with insalivation.*—

(1) Open parotid duct and parotid fistula. The condition of an open fistulous sore, although possible to be met with in connection with the ducts of any of the salivary glands, is chiefly confined to Steno's duct from the parotid previous to its entering the mouth between the second and third upper molars.

Whether occurring there or elsewhere such lesions are always troublesome and sometimes serious, while the treatment in every instance must be directed along lines essentially similar.

A simple open salivary duct is generally the result of an injury; in a few cases it may follow as a sequel of the formation of the abscess in an attack of Strangles.



In either instance a simple opening into the duct may, by failure of the healing process become converted into a fistula. The indications of either of these states are the existence of a discharge from an abrasion, its character, and the mode of its emission. The real nature and significance the moisture attached to some particular spot may not at once be suspected; a careful examination, however, will at once satisfy that the material discharged is different in character from serous or inflammatory exudate, and that, during the movement of the jaw and mastication, the quantity is distinctly increased. The opening from which the fluid is discharged may not feel tender on manipulation; it is usually slightly red and papulated, and if examined by probing it will be found that a sinus leads in the natural direction of the duct. As it is seldom that a natural healing and closing of the wound occurs without our interference, it is extremely important that attempts in this direction be made as early as possible; measures applicable in the early stage may be found inoperative when the simple puncture has become a fistula. Our object is to secure closure of the wound with obliteration of the duct. When taken in the early stages, it is sometimes possible to secure closure of the opening by means of a metallic suture or fine needle passed through the lips of the wound around which a figure-of-eight ligature is placed, covering these repeatedly with collodion or solution of shell-lac, and the enforcement of as much local and general rest as possible, the animal for some days being supported on nourishing gruels, and muzzling him to prevent his eating the litter.

When this simple method is a failure, or when our attention is not demanded until some time has elapsed from the appearance of the wound, a somewhat different method will require to be attempted to secure closure. In such cases an attempt must be made to secure an opening through the buccal membrane into the mouth, in the course of the natural canal if possible; this opening, whether through the duct or not, must be maintained patent for several days by means of a metallic or other seton, before a final effort is made to secure closure of the external opening. This latter object we endeavour to obtain in the manner already noticed. If carefully carried out, the success, if not complete, is generally partial, a smaller opening than existed at the beginning of the treatment now remaining. In such cases a cure is sometimes accomplished by the application of a little canthar. ointment over and around the orifice. When every means employed to obtain a good and perfect closure of the wound has failed, we may be warranted in attempting to extirpate the gland or to destroy its integrity. The former is a tedious process not unattended with danger; the latter is attempted by injecting into the gland structure through the duct some caustic or irritating fluid, by which the secreting function is destroyed; for this purpose I have found a solution of forty grs. of cor. sublimate, or half drachm of dilute nitric acid, with half a drachm of nitrate of silver, to the fluid ounce of water, serve the purpose well.

This injection requires to be repeated, and its use is attended with considerable disturbance to the animal.

*(To be continued.)*

## SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of the Southern Counties Veterinary Medical Association was held at Lewes on March 31st, when several matters of business were transacted, and an interesting paper read by Professor Duguid, of the Veterinary Department of the Privy Council. The chair was taken by Mr. J. D. Barford, President of the Association, and there were also present: Messrs. E. A. Hollingham, Tunbridge Wells, Hon. Secretary; A. C. Piessè, Redhill, Treas-

urer; F. W. Wragg, London; Rowe, London; W. A. Edgar, Dartford; R. J. Barton, Eastbourne; H. Raymond, A.V.D.; F. Farrance, Eastbourne; J. B. Martin, Rochester; and R. A. Stock, Lewes. The minutes of the last meeting having been read by the Secretary, and signed by the President, the Secretary read several letters apologising for inability to attend, including one from Mr. Henry Hogbin, who stated that he would rather not be re-nominated for the office of Treasurer. The Secretary also stated that, in accordance with instructions, he had communicated to Mr. George Fleming the fact of his having been created a honorary member, and had received a reply expressing his appreciation of the honour conferred upon him.

#### *Election of Officers:*

The first business was the election of officers for the ensuing year.

Mr. MARTIN proposed the re-election of Mr. Barford as President, and Mr. WRAGG seconded.

The CHAIRMAN said he appreciated very much the compliment they paid him, in again asking him to take the chair, but on principle he did not think it was quite the right thing to do. He felt that it would not be paying a very great compliment to the other members, and out of fifty-one members he felt sure they could select some one who would be pleased to accept the office. He would much prefer that they should nominate some other member as his successor, if they would kindly do so.

No other nomination was made, and

Mr. RAYMOND said, if the meeting was unanimous in asking Mr. Barford to take the chair for another year, perhaps he would kindly continue the office. The way in which he managed the affairs of the society last year, and the exceedingly good quality of the papers that were read at the meetings, should certainly have some effect in inducing them to beg him to again take the chair. (Hear, hear.) If he only looked back to the meeting held at Southampton, when Dr. Fleming spoke, he remembered seeing some of the most eminent members of the medical profession present, and he could not help thinking that Mr. Barford was doing more to bring the profession before the notice of the general public than perhaps any other President had done. He thought it was very important that the veterinary profession should be brought before the public as much as possible, and he did not think any one could see that this was done better than Mr. Barford. (Hear, hear.) If they could prevail upon him to reconsider his proposal to withdraw, he was sure they would be doing themselves good as a society, and benefitting the profession generally. (Applause.)

Mr. FARRANCE seconded the last speaker's remarks.

The CHAIRMAN reiterated what he had already said as to his reasons for desiring to withdraw, but said if it was the unanimous wish of the meeting that he should continue in the office he would not stand in the way. There was a gentleman, however, who had just entered the room (Mr. Edgar), who would, by reason of his ability and standing, make a very excellent successor to himself.

Mr. MARTIN gathered that Mr. Barford would be quite willing to take the chair for another year. They all felt that he had performed his duties so efficiently and well, that he was such a representative man, and had taken such a vast amount of interest in raising the profession to the highest status, so far as he possibly could in his position as President, that he was quite entitled to preside over them for another year. (Hear, hear.) He would, therefore, put it to the meeting that Mr. Barford be re-elected.

Mr. EDGAR, having been referred to by the Chairman, intimated that he should certainly be pleased to support the proposition before the meeting.

The motion was carried unanimously.



The CHAIRMAN, in replying, said he felt highly flattered by their recognition of his services, and he could assure them that, if he had performed his duties to their satisfaction, any little trouble he had taken had been amply repaid. It had been truly said that he had somewhat the interests of the profession at heart, and if he took any little position of onus and responsibility he trusted that he should always be found carrying out the duty that devolved upon him creditably, at any rate, if he did no more. He would do his best, if it was their wish, for another year. (Applause.)

The SECRETARY, in reply to the Chairman, said the Vice-Presidents were Messrs. Wragg, Legg, Martin, and Edgar, and, according to the rules, four were as many as was considered necessary.

There were no other nominations, and

The CHAIRMAN proposed the re-election of the Vice-Presidents, which was carried unanimously.

The next business was the appointment of Secretary.

The CHAIRMAN ventured to say that he did not think they required to elect another Hon. Secretary. ("Certainly not," and "Hear, hear.") If his friend on his right (Mr. Hollingham) would allow him to say so, he thought the appointment was in excellent hands already. The business of the Association had always gone on smoothly with Mr. Hollingham as Secretary, and he trusted that he would allow himself to be nominated for another year. He felt sure that all the members would be perfectly satisfied if he would only agree to accept office for another year.

Mr. FARRANCE seconded.

Mr. HOLLINGHAM assured them that he should be very happy if he could see his way to accept office another year. He thoroughly appreciated their kindness, and the confidence they showed in his ability by proposing him for re-election; but he took it that the great thing was to know that the business was carried on properly, and there was a gentleman in the room at that moment who, he thought, would be able to perform the duties of Secretary quite as efficiently as he could himself. Any assistance which he could give him he should be very happy to render. It was not from idleness that he was proposing to relinquish the office, but it was because he found that his business made so many calls upon him that the little time which was required to be spent on these duties sometimes rendered them rather irksome. As an amendment to the proposition, he would move that Mr. Piessè, of Redhill, the gentleman who succeeded him in his practice at Redhill, and who, he thought, would be ready to accept the office, should be appointed Hon. Secretary. As he had already said, he would give Mr. Piessè every assistance in carrying out the duties if he required any, but they were in reality so simple that he could not imagine it would be necessary.

The meeting did not appear disposed to acquiesce in the withdrawal, and

Mr. MARTIN proposed that the resignation be not accepted. Mr. Hollingham was such a jolly fellow to meet, was so fluent and eloquent, and made such nice speeches at their meetings—(hear, hear, and laughter)—and performed his duties in such an admirable manner, that he hoped the resignation would not be accepted. He was a tried man. They knew him, and were so well satisfied with him that he really thought it would be a matter of impossibility to do without him. Why, the society could not go on without him, and he must go on again another year. (Laughter.)

Mr. WRAGG seconded the proposition.

The CHAIRMAN said he was always loth to change officers, but at the same time he did not like to thrust the duties upon any gentleman, especially as this was an honorary post.

The SECRETARY again said he would really prefer to resign, for the reasons he had given, but

The CHAIRMAN put the matter to the vote, and a unanimous wish was expressed for asking Mr. Hollingham to continue in office another twelve months.

Mr. HOLLINGHAM then accepted the office, remarking that he should get Mr. Piessè in training for another year. (Laughter.)

The meeting then proceeded to the election of Treasurer. A suggestion was made for combining the offices of Secretary and Treasurer, and the SECRETARY said that he took the subscriptions and gave receipts, and paid whatever accounts there were. As he was re-elected, he proposed to furnish them with a balance-sheet at the next meeting. The balance on the last account was £22 12s. 1d. in their favour. Since then he had received thirteen guineas, making a total of £36 5s. The subsequent expenses, not including the expenses of this meeting, had been £12 15s., and there was £14 13s. 6d. due from members. Roughly speaking, there was a balance of £28 in favour of the society. (Hear, hear.) In the £14 he was including only subscriptions for past years.

The Secretary was requested to forward a reminder to those members from whom subscriptions were due.

Mr. EDGAR asked if they were going to amalgamate the offices of treasurer and Secretary.

The CHAIRMAN thought if the rules provided for their being distinct offices, it might be hardly worth while to make an alteration.

The Secretary referred to the rules, and it was considered that the offices had better be distinct.

The CHAIRMAN would be very pleased to ask Mr. Edgar to kindly take the office of Treasurer.

Mr. EDGAR was sorry that he must decline.

The SECRETARY said, so far as the practical carrying out of the duties went, it might remain as it was, but he thought they should keep up the theory of a separate appointment.

Mr. FARRANCE seconded Mr. Edgar's nomination, but

Mr. EDGAR nominated Mr. Piessè in his stead.

The CHAIRMAN, as the proposer of Mr. Edgar, accepted the suggestion, and Mr. Piessè was thereupon seconded by Mr. HOLLINGHAM, and unanimously elected.

### *The Purchase of Instruments.*

At the last meeting a suggestion was made by Mr. WRAGG with regard to the purchase of some of the more expensive instruments used in the profession, for the use of members of the Association.

Mr. MARTIN pointed out that this district was not like London, where the idea could be more easily carried out, and

The CHAIRMAN also said he thought it would be found rather inconvenient to get at the instruments when they were required. They must lie at some central place.

Mr. WRAGG said that as it seemed to be the wish of the meeting, he should be pleased to withdraw his suggestion.

Mr. HOLLINGHAM pointed out that their members extended all the way from Dover to the Isle of Wight, and northwards to London.

Mr. ROWE, speaking from his own experience in reference to the way in which the idea was elsewhere carried out, said he was afraid it was more honoured in the breach than in the observance. A sum of £50 was voted during his secretaryship for instruments, and up to the time of his resigning the arrangement was conscientiously adhered to. He gave them over to his successor, but at present scarcely a single member, he believed, knew where to find half of them. The instruments to which he referred were of an essential



character, but were so seldom required as to make their purchase an inordinate expense to the general practitioner.

The CHAIRMAN said the evil to which Mr. Rowe alluded would be still more likely to occur in a scattered district.

The matter then dropped.

*The Elections of Councilmen.*

The CHAIRMAN called the attention of the meeting to the proceedings in connection with this matter last year, when the Lincolnshire, the Eastern Counties, the West of England, the Central, the Southern Counties, and the Royal Counties Associations all amalgamated to support the same candidates. He thought it would be within their recollection that Mr. Henry Simpson, of Windsor, and himself, were the nominees of those associations, and he was happy to say that the nominations were successful. This year, carrying out the same principle, so far as the other associations had met, they were obliged to support their friend, Mr. Wragg, and Mr. John Roalfe Cox; and, sitting as he had done at the Council Board, he thought more useful members could not be found. He trusted they would all give them their support, and he asked gentlemen present to remind their neighbours who, not being present, might not be aware of the compact which they were morally bound to carry out. He moved a resolution pledging the Association to use its utmost endeavours to carry the candidates named.

Mr. EDGAR pointed out that they were already embodied in the list sent out of associations who were pledged according to the terms of the resolution. He thought they were undoubtedly pledged to vote for the same candidates, according to the meeting in London; but, he asked, who selected the candidates? If they were already pledged to support them, he thought the present proceedings were superfluous.

The CHAIRMAN took it that, all the associations having banded themselves together last year, it was hoped they would do so again.

Mr. EDGAR: Have we had the opportunity of discussing what two members we should support?

Mr. HOLLINGHAM: They supported ours last year.

Mr. MARTIN: We nominated our own last year, and we promised to give them their turn this year, and to support whoever they nominated. The other societies agree to support Messrs. Wragg and Cox, and we fall in with them, according to our promise.

The CHAIRMAN pointed out that the resolution had not been seconded. They could afterwards make any remarks upon it, or dissent from it if they desired.

Mr. EDGAR really did not see any ground for the resolution, under the circumstances, as it appeared to him that the matter had been already decided upon.

Mr. MARTIN: The understanding last year was that we should support them.

The CHAIRMAN: We entered into a sort of moral compact with the other associations.

Mr. EDGAR: I think it would have been more consistent and courteous to the Southern Counties Association had they waited before sending out this list and including our name.

Mr. WRAGG said the circulars appeared to have come out a little too soon. No doubt it was quite an oversight on the part of Mr. James Simpson, who, if he had been present, would have been better able to defend himself than he was to defend him. Mr. Cox was the nominee of the West of England Association. The Central nominated himself.

The CHAIRMAN said the mention of the name of Mr. James Simpson reminded him, that he had a letter from him, apologising for his non-atten-

dance, in consequence of a very important engagement. It happened to be the day on which the officers of the Household Brigade gave their annual dinner, and, being in the same town, he was almost obliged to attend. The circular was enclosed. He (the speaker) agreed that it might have been better if the Association had been left out.

Mr. MARTIN said, if the others had agreed, they had nothing to do but to support them, according to their compact.

Mr. EDGAR said he was not saying anything against the principle of amalgamation, with which he thoroughly agreed.

The CHAIRMAN then put the resolution, "that the Southern Counties support the election of Messrs. Wragg and Cox," which was agreed to.

### *The Royal College.*

The CHAIRMAN read a letter with reference to a proposition that the Norfolk and Eastern Counties' Society should join with the Southern Counties, the West of England, and the Lincolnshire societies, to raise a sum not exceeding £60, to present the Royal College of Veterinary Surgeons with the remaining stained-glass window. For this purpose, the Norfolk and Eastern Counties' Society had voted £15, and this Association were asked whether they would be willing to give a similar sum. The Chairman explained that he had been requested to read the letter, and he left the subject in the hands of the meeting, with only one remark. He had a very strong wish to see their building embellished in every possible way, and he thought they had been more than successful, already, in getting four stained-glass windows given them. Personally, he should have no objection to join in this movement, but there was one thing he strongly felt, viz., that they ought first of all to pay their just debts. The question of the building fund was a serious one, and he could not help thinking that if every association in the kingdom would be ready, in this Jubilee Year (laughter), to make a great effort to contribute towards that fund, it would be an exceedingly useful and proper step to take. At the same time, if it was the wish of the Association to join with the Eastern Counties—he did not know what the others had done—and contribute to this window, he certainly should not stand in the way.

Mr. MARTIN quite agreed that before going in for any luxuries in regard to the building they ought to pay for the structure. That was the downfall of a good many private individuals—to indulge in luxuries before they could have common necessities.

The CHAIRMAN knew there was a special wish that in this Jubilee year they should make an extra effort to very much reduce the deficiency on the building fund.

Mr. WRAGG asked if the fact of a contribution being made out of the funds of the society would prevent private individuals from contributing to the building fund.

The CHAIRMAN : Not in the slightest.

Mr. MARTIN suggested that Mr. Edgar should make a proposition which would, perhaps, induce others to unite with them.

Mr. EDGAR said, if the proposal before the meeting were put in the form of a resolution, he would propose, as an amendment, that they subscribe so much for the building fund.

Mr. WRAGG then moved, for the purpose of facilitating the business, that they should join with the other societies in subscribing for the window.

Mr. BARTON seconded.

Mr. EDGAR moved that, instead of giving £15 to the window, they should contribute that amount towards the liquidation of the debt on the building, and invite other associations to join them, so that the debt might be greatly reduced during the year of Jubilee.



Mr. MARTIN would have much pleasure in seconding, with the condition that all the other societies subscribed a like sum. (Hear, hear.) He would make this a stipulation.

Mr. EDGAR then moved that they should give £15, provided that the other associations gave the same amount.

Mr. WRAGG: I think you will be told by some associations that they have already subscribed.

The CHAIRMAN thought the fact of others having subscribed was rather a precedent for them.

Mr. HOLLINGHAM proposed that they should communicate with certain other societies, to be determined upon, and inform them that their gift of £15 would be dependent upon an equal amount being given by them. They could obtain their replies, and if they did not meet them in the matter they could then decide whether they would give their £15 as an independent contribution. This would put other societies on their mettle, and he thought they would be likely to obtain larger subscriptions.

Mr. MARTIN: We feel that it is a disgrace that the college should be in debt, and that we ought to make some effort to remove it.

The amendment, that £15 be given to the building fund, conditionally on ten other societies giving the same amount, was carried, with seven supporters.

Mr. WRAGG explained that he had no desire to oppose the amendment, but he had merely desired that they should get at the feeling of the meeting; and the CHAIRMAN again pointed out that this resolution was entirely outside any individual gifts.

(*To be continued.*)

#### ROYAL AGRICULTURAL SOCIETY.

At the monthly Council meeting, held on June 1st, Sir JOHN THOROLD stated that the Committee had had before them the "Observations on Milk Scarlatina," issued by the Agricultural Department of the Privy Council. Mr. Cope had presented the following report:—

"*Pleuro-pneumonia*.—According to the returns published in the *London Gazette* for the first eight weeks of the present quarter, there were ninety-nine outbreaks of Pleuro-pneumonia reported in Great Britain, and 415 cattle attacked.

"Of these outbreaks forty-one were in England, and the remaining fifty-eight in Scotland; and of the cattle affected 124 were in England, and 291 in Scotland.

"The districts in England in which the disease has been most prevalent, during the period above named, are the Metropolis and the West Riding of Yorkshire.

"In Scotland the disease has been most prevalent in the counties of Edinburgh, Forfar, and Lanark; in the last-named county no less than twenty-five fresh outbreaks have occurred in eight weeks, and 117 cattle have been attacked by the disease.

"*Swine Fever*.—The *Gazette* returns for the eight weeks ending May 21st show that 1,610 fresh outbreaks of this disease were reported in Great Britain, and 8,676 swine were attacked by it. Of these 5,733 were slaughtered, 2,215 died, and 148 recovered.

"*Anthrax*.—In Great Britain, during the eight weeks above referred to, there were thirty-seven outbreaks of Anthrax reported, in which 134 animals were attacked. Of the above outbreaks, thirty occurred in the counties of Chester, Cornwall, Derby, Essex, Hants, Kent, Lincoln (parts of Holland), Lincoln (parts of Lindsey), Norfolk, Northampton, Notts, Rutland, Sussex (East), York (West Riding), and the Liberty of the Isle of Ely. The other

seven outbreaks occurred in Pembrokeshire, in Wales, and in the counties of Aberdeen, Banff, Edinburgh, and Forfar, in Scotland.

"*Rabies*.—Reports of outbreaks of this disease have been received during the present quarter from the counties of Chester, Derby, Essex, Huntingdon, Kent, Lancaster, Middlesex, Notts, Stafford, Surrey, York (West Riding), and the Metropolis in England, but no cases of the disease have occurred in either Wales or Scotland. There have been altogether 223 cases reported during the period mentioned, but 110 of these really occurred prior to that time among the deer in Richmond Park, but were not reported at the time because the disease affecting the deer was not at first recognised as Rabies. Of the 223 animals attacked by Rabies, two were horses, two cattle, forty-five dogs, and 174 deer."

Professor Robertson had presented his report on experimental work on protective inoculation for Anthrax and Quarter-ill, of which the following *résumé* gives the practical outcome of the work:—

"The practical outcome of this work appears to us to be that it has made clear the fact of the communicability by inoculation of this disease known in England as Quarter-ill, and its identity with that spoken of by MM. Arloing, Corenen, and Thomas as 'Charbon Symptomatique.'

"That without further proof of its efficacy we cannot recommend the use of Arloing's dried muscle-juice as a means of protecting cattle from the disease in Great Britain.

"That the simplicity of this method of inoculation, as well as its general practicability, favours its adoption; that inasmuch as some of our experimental guinea-pigs, after being 'vaccinated' with muscle-juice subjected to the effect of a lower temperature, resisted the influence of injected virulent matter, some of which killed cattle and other guinea-pigs vaccinated with Arloing's powder, further experiment in this direction should be made. That in such case, and, indeed, in all, the result is likely to be incomparably more valuable and trustworthy if experiment for protection be made with animals of the class for which practical protection is sought.

"That the Hodnet Hall experiments go very far to prove that the intravenous injection of considerable quantities of fresh virus is protective, and to a large extent practicable. The greatest drawback to its general adoption seems to be the necessity for fresh material with which to inoculate. This difficulty is not really as great as at first sight may appear. It at least has this in its favour, that it entails the existence of the disease on the estate, and does not encourage the chance of introducing fresh disease from without, as is the case, probably, with some systems of inoculation.

"Resulting from the publication of a report of the experiments at Hodnet by Major Percy, several stockowners have applied to us to have their animals protected by the intravenous method. In view of the results already obtained we strongly advise the farther and fuller adoption of this plan.

"In concluding our report, we must again acknowledge our indebtedness to Mr. C. de Murietta for placing animals and services at our disposal; to Major Percy, whose untiring interest in the whole matter, and great solicitude for the proper observance of all details in connection with the Hodnet experiments, have had no small share in the attainment of their success; to Messrs. Bennett, Ryott, Kettle, and Barrow, veterinary surgeons, who, together with other gentlemen before referred to, have rendered material assistance.

"(Signed) WILLIAM ROBERTSON,  
JOHN PENBERTHY."

It was resolved that the whole report should be referred to the *Journal* Committee, with a view to its publication in the *Journal*, and that Professor Robertson should be asked to prepare an abstract of it for immediate publication in the agricultural press.



A report had also been received from one of the Society's provincial veterinary surgeons, in reference to the absence of any serious outbreak of disease amongst the animals of the farm in his district (Bedford).

The report having been presented, the PRESIDENT said that before putting it for adoption he thought that it was desirable to call attention to the statements which had been made in the public newspapers by Dr. Klein on the subject of Milk Scarlatina. A report upon this subject had been presented to the Veterinary Committee by the Agricultural Department of the Privy Council. A very alarming account had been given as to the possibility of Scarlatina being communicated to human beings by the use of milk from diseased cows. It was most desirable in the interest not only of agriculture, but of the public at large, that this question should be fully cleared up ; and he (Lord Egerton) thought it was for the Council of this Society to suggest to the Agricultural Department of the Privy Council that they should undertake further investigations into the subject, with a view to making it clear whether it was possible that Scarlatina could, as alleged, be communicated direct from the milk of diseased cows. He would suggest that a letter should be addressed to the Agricultural Department on the subject.

Mr. COPE, in reply to the President, said that the report which was presented to the Committee was, as they were aware, the result of an application from the Royal Agricultural Society to the Privy Council for an inquiry as to the subject. Professor Axe had made the inquiry, and he ascertained that the eruptive disease of the udder and teats affecting cows existed not only upon the implicated farm at Hendon, but at four other places at the same time. The outbreaks of Scarlatina and this disease were identical in point of time, but, as a matter of fact, no outbreak of Scarlatina occurred in connection with the four other places. Professor Axe, in consequence of these facts, had with good reason come to the conclusion that the milk which was stated to have produced Scarlatina, at the end of 1885, must have received its infection from some other source than that of the cow. Dr. Klein, in his statement at the Royal Institution on Friday last, suggested that the cows might themselves have been affected with Scarlatina at the time, and he further suggested that they might also have been infected by the people who were milking them. Dr. Klein had also endeavoured to prove that he could produce Scarlatina in cows from material obtained from Scarlatina patients. It would, however, be most satisfactory to the Council to know that when an opportunity was afforded by an outbreak of this eruptive disease, appearing among the cows of this country, the Agricultural Department had instructions from the Government to make any inquiries that might be necessary, and they hoped, if they could only get the information, to issue a further report on the subject.

Mr. WAKEFIELD said that the article in the *Times* on the subject had fallen like a bomb on the milk-drinking portion of the country. It was a question whether some immediate action should not be taken by this Society. Silence gave consent, and if nothing were done in the matter, it might be that those who were looked up to as being in a position to quiet the mind of the country in such a matter were by their silence consenting to the statements which had been put forward by Dr. Klein. The statements made were alarming, and demanded immediate consideration.

The PRESIDENT suggested that the Society might endeavour to find out whether it was possible for cows to have Scarlatina. If it were possible, then, no doubt, Scarlatina might be conveyed to human beings through the milk. If it were not possible for cows to have Scarlatina, then they might feel (assuming that the Scarlatina had been conveyed through the milk) that it was owing to some other cause than that of the cows ; the milk might have been exposed to the infection of contagious disease through the hands of

those who milked them. It was a question which ought to be investigated by the Privy Council, and they should endeavour to ascertain whether it was possible for cows to have Scarlatina at all. The President suggested therefore that the Society should ask the Government to hold an inquiry into this matter, and not leave it to the Local Government Board, but that the officers of the Agricultural Department of the Privy Council should itself take up what was of the greatest importance to agriculturists. If it were the pleasure of the Council that a letter should be addressed to the Privy Council, in which the Society would ask them to conduct any inquiries which they might think necessary to clear the matter up, he would see that it was done.

The motion of the President having met with the unanimous approval of the Council, the whole report was adopted.

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### Reviews.

A MANUAL OF VETERINARY HYGIENE. By FRED SMITH, M.R.C.V.S.,  
Army Veterinary Department. (London: Baillière, Tindall, and  
Cox. 1887.)

The great need for a work on veterinary hygiene has long been felt, and it is rather surprising that no one has come forward to supply the want. Considering the immense importance of maintaining horses and other animals in health and efficiency, and the progress that has undoubtedly been made in sanitary science, there was every reason to look for some authoritative guide on the subject for the use of veterinary practitioners and the instruction of students. At last, however, the reproach has been removed from us, and by the production of the work now issued Mr. Fred Smith has given us a manual in every way worthy of the profession, while, so far as the English language is concerned, the book is unique with regard to its subject. In France, Magne's treatise on veterinary hygiene has always held a deservedly high place, and has passed through at least two editions. There is no reason why Mr. Smith's manual should not prove even more successful, as it possesses all the requisites to be found in the French author's work, but in a more complete and succinct form; while, though written in somewhat popular style, it has a more scientific basis.

Everything relating to water, air, ventilation, food, stables, drainage, soils, disinfection, and labour in connection with health, is dealt with in a series of chapters, while other chapters are devoted to individual hygiene, the eradication of epizootic diseases, elementary meteorology, and statistical inquiry.

There are a few statements which probably some army veterinary surgeons might dissent from, as that on page 303, which ascribes the violent or furious condition of horses on shipboard to congestion of the brain; and on page 298, that slings and padding are unnecessary for ship-stalls. With regard to embarkation of horses, it is omitted to be mentioned that now they are more frequently walked on board than slung, thanks to improvements in transports.

But these trifles in no way detract from the excellence of the work, which, well illustrated, printed, and finished, forms a most valuable addition to our literature, and well merits high commendation.



LECTURES ON MEDICAL PATHOLOGY. By H. G. SUTTON, M.B., F.R.C.P.  
(London : Baillière, Tindall, and Cox. 1886.)

These "Lectures on Medical Pathology" were delivered at the London Hospital during the summer session of 1885. They comprise the leading subjects in pathology, and are eminently instructive and suggestive, especially the earlier lectures on the Nature of Disease, Inflammation, the General Conditions of Inflammation, and Inflammation of Serous Membranes. The others, though they are no doubt worthy the attention of veterinary surgeons, yet possess more importance for the practitioner of human medicine. Throughout the work there is noted a philosophical reasoning and reflections on disease processes which give great force to the views put forward, while the anecdotes of cases, given, as they are, in a conversational style, put author and reader at once upon familiar terms, and render instruction easy and pleasing.

THE LIVER-FLUKE AND THE ROT IN SHEEP. By E. HALSE, A.R.S.M.  
(London : Stanford. 1887.)

This contribution to the life-history of the liver-fluke, and the morbid condition it produces in animals, was a prize essay written while the author was a student at the Agricultural College at Tamworth, the prize being offered by Miss Ormerod, consulting entomologist to the Royal Agricultural Society, who has done so much for agriculture by her researches in vegetable and animal parasitology. There is nothing absolutely new in the essay, but all the principal facts relating to the subject are arranged in a careful manner, and described in such a way that the non-scientific reader can be made acquainted with the most recent investigations without loss of time or patience. There is a folding plate containing figures of the liver-fluke and its intermediate bearers.

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## **Army Veterinary Department.**

*Gazette, June 17th.*

Veterinary-Surgeon, First Class, C. G. H. Reilly, retired pay, has been granted the honorary rank of Inspecting Veterinary-Surgeon. Veterinary-Surgeon, First Class, Daniel Isaac Hinge, has been placed on retired pay, with the honorary rank of Inspecting Veterinary-Surgeon.

The Annual Dinner of the Department took place at the Whitehall Rooms, Hotel Métropole, London, on June 10th. There were present: Principal Veterinary-Surgeon G. Fleming, LL.D. (in the chair); Inspecting Veterinary-Surgeons Evans, Lambert, Walters, and Marshall; Veterinary-Surgeons (First Class) Thomson, Walker, Duck, Poyser, Oliver, Rostron, Kettle, Berne, Reilly, Woods, Wilson, S. L. Pallin, J. W. Evans, Jones, Whitfield, Philips, Burton, Longhurst, Spooner, M. Anderson, Edwards, F. Smith, D. C. Pallin, W. Pallin; Veterinary-Surgeons Morgan, Hagger, Killick, Savage, Moore, F. Raymond, Rutherford, Lees, Forsdyke, Griffith, Caldecott, Kelly, Bennett, R. W. Raymond, and Dundon. Covers were laid for forty-eight.

At the great Jubilee Service held at Westminster Abbey on June 21st, at which the Queen was present, the Army Veterinary Department was represented by the Principal Veterinary-Surgeon, and Inspecting Veterinary-Surgeons Evans, Lambert, and Walters, to whom places were allotted.

## Notes and News.

OLD CURES FOR HYDROPHOBIA.—Strangely fanciful and astonishingly ignorant were the prescriptions for most diseases in times of old. M. Pasteur's experiments in dealing with Hydrophobia sends us back to the old remedies, and these were some of them. The dried liver of a boar drunk in wine was esteemed very efficacious. Hyena's liver was also strongly recommended; but a still more sovereign remedy was the liver of a young puppy. The fat of a seal, mixed with the marrow of an hyena, was prescribed, both for outward and inward application. A field-mouse's tail, burned and beaten into dust, was sometimes applied to the wound; but not with any hope if the tail had not been cut off while the mouse was alive. Unicorn's horn—that precious medicine so highly esteemed as an antidote to all poisons—was occasionally used in cases of Hydrophobia; but the difficulty here was in getting the genuine article, there were so many imitations. Sheep's wool undressed, applied to the wound, was supposed by some to work a perfect cure in seven days. The gall of a bear, steeped in water, was reckoned an excellent remedy; but the patient had to fast three days before taking this savoury physic, which was a great drawback. Other remedies were a snake's skin and a male crab pounded together; young swallows burned and beaten to powder; the hairs of a dog laid upon the wound; the roots of dog-roses; the tongue of a ram, with salt; and green figs soaked in vinegar. Amulets—an easy kind of medicine—were frequently recommended. Patients were advised to wear an hyena's skin, or a young wolf's skin, in which the root of gentian had been enclosed; or sometimes a dog's tooth was fastened in a leaf and tied round the patient's arm. A tale is told of some priests, belonging to a certain church of St. Lambert, in a city of Picardy, who undertook to cure Hydrophobia in a very special manner. When a sufferer was brought to them, they cut a cross in his forehead; then they burnt a piece of the saint's robe, laid it upon the part that had been bitten, sewed up the wound, and applied a plaster. After this operation the patient was put on a diet of hard-boiled eggs and water. If he failed to recover within the space of forty days, he was regarded as incorrigible; they bound him hand and foot in his bed, and smothered him. One heroic remedy, mentioned by Pliny, was to salt the flesh of a mad dog and eat it. The head of a dog powdered was also considered efficacious. Cheese, made of goat's milk, mixed with wild marjoram, was sometimes prescribed. A common practice was to plunge a patient into cold water—sea-water, if possible. The case is related of a girl who, suffering from the fearful malady, was repeatedly plunged into a tub of water in which a bushel of salt had been dissolved until she became insensible; then she was left in the tub, propped against the sides. At length she regained her senses, and found herself not only able to look at the water, but even to taste it. These are some of the old cures for Hydrophobia; but even in those days it was understood that prevention is better than cure, and the old writers lay down directions which, if followed, would enable a man to face the maddest of dogs. "If a man hold the tongue of an hyena in his hand," says Topsel, in his delightful "*History of Four-footed Beasts*" (first published in 1607), "there is no dog that dareth to seize upon him." From the same authority we learn that all living creatures will fly from a man who is thoroughly anointed with the fat of a lion. Wolves were supposed to stand in great dread of a lion; and whoever anointed himself with tallow taken from a lion's loins would be able, "by the scent and savour thereof, to drive away from him all wolves, how greedy and ravenous soever they be." There used to be several methods of curing mad dogs. One way was to shut them up, keep them fasting for a day, administer hellebore, and then feed them on bread made of barley-meal. Another way was to put the dog into water, with



his hind-legs touching the ground, and his fore-legs fastened above his head. (Poor wretch!). When he was taken out of the water, his hair was to be shaved off close to the skin. "Then anoint him with oil of beets; and if this do not cure him within seven days, then let him be knocked on the head or hanged out of the way." It was supposed that madness could be produced in a dog by giving him hot wheaten bread dipped in bean-water. Should any person entertain the notion of eating the gall of a mad dog, it may be well to warn him that he runs the risk of dying within seven days: after seven days the danger is over. Should you be bitten by a dog, and desire to ascertain whether you are likely to be afflicted with madness, take some grains of corn, apply them to the bitten part, and then give them to a hen. If the hen dies from the effects of eating the grain, you may be sure that you will have Hydrophobia. The best thing is (say the old writers) to worm your dog when he is young; for a dog that has had the worm removed from his tongue will never go mad. Immediately after the worm has been removed you must rub the dog's tongue with salt and oil. If you do not like this process, the next best thing is to adopt the precautionary measure employed by shepherds in Columella's time. Take your dog's tail and pluck out from it a certain sinew that runs to it from the joints of the backbone. By so doing you will not only secure the animal from all danger of Rabies, but you will greatly improve the appearance of his tail. This operation, however, should be performed before the dog is old.

JUBILEE INSTITUTES FOR ANIMALS.—A gentleman offers £100 for an Institute of Comparative Pathology (without vivisection) to study the diseases of the lower animals and their similarity and communicability to the human subject, £50 for a Horse Institute, £50 for a Dogs' Institute, and £50 for a Cats' Institute, on condition that ten donors of similar amounts be added for the same purposes. Communications may be made to the Hon. Cecilia Sandys, 1A, Wilton Place, S.W.

STATISTICS OF HYDROPHOBIA.—It is officially reported that the total number of persons subjected at the Pasteur Institute in Paris to the Pasteur treatment from the end of October, 1885, to the end of December, 1886, was 2,682. Of this number 2,164 had been bitten by animals known for certain to have been mad at the time of biting, and the remaining 518 by animals suspected to have been mad. Of the 2,164 bitten by animals undoubtedly mad, and treated according to Pasteur's method, twenty-nine persons died, representing a proportionate mortality of 1·34 per cent. Of the 518 bitten by animals presumed to be mad, and subjected to Pasteur's treatment, only two died—*i.e.*, 0·38 per cent. Before the discovery and application of the Pasteur method of treatment the proportion of mortality from that disease among the persons affected by it was at lowest 16 per cent. If, then, the 2,164 persons in the state described had not been treated by the Pasteur method, the cases of mortality among them would have been, not twenty-nine, but 346. That is to say, of the 2,164 persons, 317 owe their present existence to Pasteur's method. Looking next, exclusively to the most dangerous cases, we find that there were forty-eight persons bitten by mad wolves, 186 persons bitten on head or face by animals known to be mad, and twenty-eight bitten on head or face by animals presumed to be mad. Of the forty-eight in question seven died—*i.e.*, a mortality of fourteen per cent. The mortality in similar cases before the Pasteur method was sixty to eighty per cent. Moreover, three of the forty-eight persons had actually broken out in Rabies before the application of the treatment, and their deaths may, therefore, be left out of account, thus reducing the mortality of this class under the Pasteur treatment to eight per cent., as against sixty to eighty per cent. without the Pasteur treatment. Of the 186 above specified, the number of persons who died was nine, or 4·83 per cent., as against eighty-eight per cent. without the Pas-



teur treatment. That is, out of the 186, 163 would have died but for the Pasteur treatment, whereas, with the Pasteur treatment, only nine died. Lastly, of the twenty-eight above specified, only one died—*i.e.*, a mortality of 3.57 per cent. For some months past M. Pasteur has modified his method, and in the most serious cases has applied, not simple, but what he calls intensive, treatment. So that while out of the 136 specially serious cases in which the simple treatment was applied, nine died; in fifty specially serious cases in which intensive treatment was applied, no mortality whatever followed.

CONTAGIOUS DISEASES AMONG ANIMALS IN LONDON.—The report of the Metropolitan Board of Works for 1886 has just been issued, and contains, as usual, important statistics in respect of contagious diseases of animals within the metropolis. From this source we learn that there has been no Foot-and-mouth Disease within the Metropolitan district since February, 1884; no case of Sheep-pox in 1886; and three outbreaks of Sheep-scab in that year. There were in 1886, sixteen outbursts of Swine Fever; the value placed on the 155 diseased animals slaughtered by the Board's direction was £243 7s. 6d., and the compensation awarded was £118 8s. 9d.; the amount of compensation actually paid within the year was £260 13s. 9d., which included £89 for healthy swine (which had been in infected sheds) slaughtered in December, 1885. The number of cases of Glanders and Farcy reported on by the Board's veterinary inspectors in 1886 was 946, an increase of 161 on the number for 1885. Notwithstanding the proceedings from time to time taken by the Board to put a stop to the danger arising from persons taking glandered and farcied horses through the public streets, the practice still continues. During the year ten persons have been summoned—one for sending a farcied horse by railway from Oxford to London, and nine for not having given notice of the outbreak of the disease and for leading diseased horses on the highway. Convictions were obtained in all these cases, and fines and costs were imposed. The number of glandered animals reported in 1883, 1884, and 1885 was 497, 517, and 420, respectively, and of animals suffering from Farcy, 471, 439, and 365. In the year 1886 the numbers have been 504 glandered and 442 farcied. These animals were all slaughtered, with the exception of eight which died, and of thirteen suffering from Farcy, which were placed under medical treatment, and recovered. The carcasses were destroyed at one of the places licensed for the purpose. The horse-slaughterers' premises on the north side of the Thames are also visited daily, and the knowledge that visits at uncertain hours are now made to all the knackers' yards will, it is hoped, deter persons from attempting to move horses suffering from Glanders and Farcy. The total number of animals received at the three licensed slaughterers' yards on the north of the Thames was 12,956, and at the three yards on the south, 10,488, and of these about 11,700 and 8,200 respectively were examined by the Board's veterinary inspectors.

ANIMALS IN THE UNITED STATES.—According to the abstract prepared by the United States Bureau of Statistics, and recently presented to the House of Representatives at Washington, the number of horses in the United States on January 1st, 1887, was 12,496,744, as against 10,155,400 on January 1st, 1877, showing an increase of 22 per cent.; the number of mules on January 1st, 1887, was 2,117,141, as against 1,443,509 on January 1st, 1877, an increase of 47 per cent.; the number of milk cows on January 1st, 1887, 14,522,083, as against 11,260,800 on January 1st, 1877, an increase of 29 per cent.; the number of oxen and other cattle on January 1st, 1887, 33,511,750, as against 17,956,100 on January 1st, 1877, an increase of 24 per cent.; the number of swine on January 1st, 1887, 44,612,836, as against 28,077,100 on January 1st, 1877, an increase of 59 per cent. The total value of all the live stock in the United States on January 1st, 1887, is estimated at 2,400,586,938 dols., as against 1,268,762,872 on January 1st, 1877, an increase in the value of United States stock of 89 per cent.



## Correspondence.

## THE CURE OF ROARING BY GALVANISM.

DEAR SIR,—I have only just received your April number, and in reading the editorial on "Roaring in Horses" I thought the following might prove of interest.

At the end of the hunting season of 1885-6, I went to examine a stud of horses, the property of a prominent welter weight of the Quorn Hunt, for the purpose of advising what should be done to one or two of the horses that were or had been lamed; and in passing one horse the owner remarked upon the ill luck he had—in that nearly all his best horses went roarers, and regretting that nothing could be done for them, pointing to this horse in particular as a very valuable young horse that had just started a slight whistler. I asked him to have a saddle put on, and I galloped him and found he made a decided whistle, but only in his slow canter, and when pulled sharp on the curb rein. In conversation afterwards I mentioned that the only thing to cause relief would be the use of the battery, but as it was, as far as my knowledge went, totally untried, it would simply be an experiment. The owner decided to have it tried, and I had the apparatus made, fitted, and for nine months the horse was under the galvanic current twice a day, one hour at a time. I went over several times to try his wind, and fancied there was an improvement. When the gentleman returned from America he also rode him, and was sure of the improvement; and, not to waste your valuable space, he has ridden the horse all the season, and has told me several times that he cannot hear a sound. He is very pleased with the results, and so am I. I feel sure that much may be done to alleviate, if not cure, this prevalent disease; but there is no doubt that it must be taken in time, as I do not think for a minute that any treatment would do good in chronic cases.

Humberton Gate, Leicester.

J. G. PARR, V.S.

## THERAPEUTICS.

SIR,—Mr. Fred. Smith's article on the above subject seems to have made a great stir among the old school of "drench 'ums." There are probably very few thoughtful veterinary surgeons who have not given the article more consideration than any of the scientific or simply anecdotal cases recorded from time to time in the journals.

It is greatly to be desired, for the benefit of veterinary medicine, that practitioners with opportunity will give us their experience with the drugs mentioned by Mr. Smith.

We have been taught that "Opium is the sheet anchor of the veterinarian," and our thermometers have recorded a falling temperature with aconite in doses which, Mr. Smith informs us, are quite inert. First comes a lament from a country practitioner, whose faith in his former fetishes is shaken; and lastly, a letter from a druggist, making a lot of contradictions without giving any reason for the faith that is in him, and patronising Mr. Smith by affecting to agree with him in some other matters. The gentleman I refer to is Mr. J. Dowling Allman, who would pose as a therapist of great weight, for whose opinion the veterinary profession has been waiting with bated breath.

No doubt Mr. Editor gives us some advantages in the admission of papers from "all sorts and conditions of men," instead of acting as do the editors of the *Lancet* in excluding MS. from any but qualified practitioners. There is, however, an evil arising out of this generous laxity, and I called attention to it in 1878, when Mr. Allman's articles appeared in this Journal; they were

but thinly-veiled advertisements of the nostrums of a particular firm of druggists, for which Mr. Allman was the travelling representative.

If publishers are deprived of their legitimate profits it is no reason why we should accept druggists as high therapeutic authorities. Therapeutics is a subject not taught to pharmaceutical graduates, either as applied to men or horses, and associates of the Pharmaceutical Society (whether by registration or examination) are performing their highest and best functions when preparing the agents or dispensing the materials prescribed by practitioners.

As I have not the honour of Mr. Allman's acquaintance, and have never had any connection with him or his firm, I cannot be charged with prejudice in attempting, for the second time, to expose what I deem a flagrant impertinence. Perhaps if I knew him I might recognise a therapist indeed, in whom there is no guile. It was my privilege to study with Mr. Fred. Smith at the R.V.C., and many a profitable hour's "grind" we had. His "infinite capacity for taking pains" commends what he writes to all thoughtful readers, and he is not the man to state as a truth anything he has not established by experiment.

I have been for years sceptical as to the anodyne properties of opium, as I failed to produce any "calmative" effect with 10 oz. Tinct. Opii on a horse that would not be clipped. I have used many gallons of Tinct. Opii, and many pounds of the powder, because my forefathers have done so, and my teachers have so taught. There is very little doubt that I represent the average practitioner in this respect. We have no time to prove these things when once launched upon the business of living by practice, and we cannot thank such men as Fred Smith sufficiently for the painstaking investigations their time affords.

I have tried Ext. Cannabis Ind. in several cases, notably in Colic, Enteritis, and Sympathetic Fever.

In the case of a horse employed in timber-hauling I gave ʒj., and repeated it in two hours.

Within half an hour of the second dose, and by the time the first paper was dissolved, the animal seemed to go to sleep standing, with entire absence of pain, and remained so for twenty hours, when all the symptoms returned, and I repeated the dose with the same effect. The action of the drug in this and other cases is so quick and so *great* that it is quite alarming, and I feared my first two patients would fall down. They both recovered, and I have now a brood mare of my own, with open stifle joint, to which I have given several ounce doses with the most marked and immediate alleviation of pain, and I attribute the success of treatment entirely to the fact that large doses of this drug kept her perfectly quiescent, giving to the limb rest instead of that miserable catching and dangling which characterises such injuries. There is none of the constipation that appears to be the result of opium treatment, or is at any rate commonly associated with it; but there is, if I may so term it, a suspended animation or dreamy condition, which I have not seen before, either as a result of disease or the administration of drugs.

The mare before-mentioned appears to be always asleep, but if roused by a few drops of water on the face, or a sudden noise, she will at once commence to feed, and continue to do so for some minutes, relapsing again into the same comatose condition, and aroused again as often as the process is repeated. All the horses I have given Cannabis to have been large ones, and the effect of one-ounce doses is so very great that I imagine we might do with much less, and I hope other experimentalists will give us their advice. We do not want the suggestions of theorists who arrange a posological table for the horse, on the ground that twenty drops of Tinct. Opii will make a man sleep, and therefore fifteen times that quantity will make a horse do so. We have books, and even pharmacopœias, arranged on that basis, and they are defective,



if not absolutely misleading. Unless we accept homœopathy at once, we can only arrive at a rational system of therapeutics by the experimental plan adopted by Mr. Smith.

HAROLD LEENEY, M.R.C.V.S.

East Grinstead, Sussex.

#### FAIR PLAY AND NO FAVOUR.

SIR,—Would you oblige by insertion of the following? A few days ago a local gentleman purchased a horse from me as a four-year-old, subject to veterinary examination. The veterinary surgeon calls him only three years old, yet he has a full mouth of permanent teeth; the corner teeth are not quite fully up, as they were removed three months ago, but even then he had eight permanent teeth and tushes well up, showing a full four-year-old mouth—in fact, by October, to ordinary observation, the mouth will be five-year-old, although not that age until May of next year. What am I to do in this matter, as this is only one of many instances in connection with the same individual, either from want of knowledge, or malice? I can scarcely believe it to be the first, but I think it ought to be stopped in either case, for the credit of the profession. I may just say I have had the same horse examined, and hold a certificate that he is full four years old.

JAMES TEENAN.

Sandyford Road Horse Repository, Newcastle-on-Tyne, *June 14th*, 1887.

#### SOCIAL STATUS AND PROFESSIONAL ETIQUETTE.

SIR,—Newly-fledged veterinarians and juniors in the profession would have us believe that our position is far higher than it was, and that, thanks to them, it is still rapidly improving.

As an old graduate, and a "rolling" one, I have come in contact with more members of the profession than most, and I am quite convinced that outward appearance—elaborate costume, vehicular display, and dogmatic assumption—go far with some to show social importance. Without doubt many succeed by these means who, weighed in a professional scale, would be found lamentably wanting, and who have to learn their business at the expense of their clients. It is not what "a man knows, it is what he wears" that passes muster and brings business.

It may be old-fashioned, but I cannot but believe that our social position is dependent on something more than outside show, or even bounce, and that it will never be what it ought to be when such as those I have just mentioned pose as its successful exponents, or when men of established practice do things that reflect upon either their judgment or their integrity.

Out of many instances, there is one (quite a recent occurrence) that points the moral. The largest dealer in horses that we have in this district, and one who prides himself on keeping quality and being thoroughly straight, a few days ago sold a horse to a local gentleman as being four years old, and subject to veterinary examination. The veterinary surgeon certified it to be only three years old; purchaser declined, owing to the age, and the sale was prevented. I have examined this animal, and find that he has twelve permanent incisors, the corner ones not fully developed, and had evidently been artificially removed; but his tushes were well up. I have certified him to be full four years old, and I have not the least doubt that in the late autumn he might pass for five years old. In this case, either ignorance or animus seriously operated to the prejudice of the vendor, and it is questionable how far such conduct can be carried without coming within the reach of the law. If it is an error of judgment, it is a serious reflection on professional ability; if from animus, it is a social degradation.

I know some of my younger *confrères* who believe only in professional etiquette so long as it brings grist to their mill, and who look upon the

business as a question of £ s. d. only. They make a stepping-stone of anything to augment their professional income, regardless of their own or fellows' honour. An illustration of this recently occurred here in a police case. It was not simply a question on a disputable point, but one in which the reflection was on the character and credit of the individual mainly concerned; and yet, forsooth, two professional juniors stretched a point on a subject on which they, and especially one of them, were by far the least competent of any giving evidence to decide, and this was done to throw a stigma on one of their own profession. It was a dirty piece of business, and because I said so, one of them took it upon himself to say he was insulted, a protest that carried a weight corresponding to his own insignificance.

I could give you a few more illustrations—a good many personal ones—but I refrain, and leave you to judge how far our status is raised by the conduct I have quoted.

W. G. R. A. Cox.

Newcastle-on-Tyne.

### EXAMINERS.

SIR,—As Mr. Blakeway in your journal for May has thrown out a suggestion for those who have had personal experience of an *obnoxious examiner* to state "their opinions in print," perhaps you will permit me, as a graduate of 1885, to say a few words on the subject. I do not speak for myself alone (and I can adduce proof of my statements) when I say that Mr. Robinson is really the only Examiner to whom the students object. He has been described in very moderate language, as for sarcasm and impertinence his equal would be hard to find, and I am *sure* he has some reckoning to make with students he has grossly insulted.

I notice Mr. Greaves says at the end of his letter, "How would the student get on if the whole Board of Examiners consisted of such men—men of his nationality?" Does Mr. Greaves mean to infer that all Scotchmen are alike? I must say it is rather humiliating to think that HE (Mr. Robinson) is a Scotchman, and if the contrary could be proved, I am sure most Scotchmen would be glad.

JAS. K. CALDERWOOD.

Clitheroe.

### Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from G. H. Fenton, A.V.D., Kamptee; Professor Axe, London; W. S. Adam, A.V.D., Hosur; J. A. Nunn, A.V.D., Pietermaritzburg; J. K. Calderwood, Clitheroe; J. G. Parr, Humberton Gate; A. Gresswell, Louth; N. Smith, London; R. Spooner Hart, Calcutta; H. Sumner, Liverpool; Professor Limont, Glasgow; W. G. R. A. Cox, Newcastle-on-Tyne; J. Teenon, Newcastle-on-Tyne; W. Hunting, London; C. Cunningham, Slateford.

BOOKS AND PAMPHLETS: *F. M. Bailey* and *P. R. Gordon*, Plants reputed Poisonous and Injurious to Stock; *F. A. Zurn* and *H. Plaut*, Die Schmarotzer auf mid indem Körper unserer Haussäugthiere, etc.; *A. Johne*, Der Trichinenschauer; *A. Watrin*, Le Pied du Cheval et sa Ferrure.

JOURNALS, ETC.: *American Veterinary Review*; *Annales de Médecine Vétérinaire*; *Recueil de Médecine Vétérinaire*; *Der Hufschmied*; *Revue Vétérinaire*; *Lancet*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Quarterly Journal of Veterinary Science in India*; *Journal of Comparative Medicine and Surgery*; *Medical Review*; *Echo Vétérinaire*; *Journal of Agricultural Society of Victoria*; *Medical Press and Circular*; *Edinburgh Medical Journal*; *Mark Lane Express*; *Journal of Society of Arts*; *Live Stock Journal*; *Practitioner*; *National Live Stock Journal*; *Repertorium der Thierheilkunde*; *Animal World*; *Farm, Field, and Fireside*.

NEWSPAPERS: *South Australian Register*; *South Eastern Gazette*; *York Herald*; *Manchester Guardian*.



# THE VETERINARY JOURNAL

AND

## Annals of Comparative Pathology.

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AUGUST, 1887.

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### CHEMISTRY OF THE BLOOD IN PURPURA.

BY FRED SMITH, A.V.D., ARMY VETERINARY SCHOOL, ALDERSHOT.

I HAVE read with interest the "Note on Purpura Hæmorrhagica," published by Professor Limont in your last issue.

Three or four years ago I observed what I thought was a micro-organism in the blood of these cases, but as inoculation failed to produce the disease in another horse, I concluded it was not a pathogenic organism.

Within the last few weeks I have been supplied, through the courtesy of Mr. Duck, A.V.D., with the necessary material for work, and I utilised the opportunity to find out what the chemical changes were in the blood.

Blood from the pulmonary artery was taken under suitable precautions. It was very black in colour, scarcely coagulated, and very soon underwent putrefaction; before this change occurred a guinea-pig was inoculated on the inside of the thigh, within an hour of the *post-mortem* examination, and the result of this inoculation will be detailed presently.

#### *Analysis of Purpuric Blood taken from the Pulmonary Artery.*

Water	..	..	..	..	73·0400
Total albuminous constituents					24·7974
Fibrine	..	..	..	..	·1226
Fat	..	..	..	..	·4400
Alcoholic extract		..	..		·2060
Watery extract		..	..		·5820
Salts	..	..	..	..	·8120 including iron ·0168.

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100·0000

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This may be compared with an analysis of the healthy blood of the horse made by Nasse.\*

Water .. .. .	80·4759
Total albuminous constituents	18·4710
Fibrine .. .. .	·2410
Fat .. .. .	·1310
Salts .. .. .	·7862 including iron ·0786
	<hr/>
	100·1042
	<hr/>

Nasse's results are slightly in excess of the percentage, but as a means of comparison they will be sufficiently accurate.

We observe that in Purpura the total albuminous constituents are increased, and the fat very much so; the fibrine is much decreased, and as we might expect, the water is the same. The iron would appear to be smaller than in normal blood.

There were some little difficulties connected with the analysis of the purpuric blood. For instance, the process for determining the quantity of albumen and hæmoglobin contained in the corpuscles, and the proportion of albumen in the serum could not be carried out, for the reason that the blood behaved in such a way as to render the recognised methods of determination useless.

Immediately after death a microscopical examination of the unstained blood was made. I could see no organisms of any kind, but the red corpuscles had ragged edges. *There were no white ones to be seen*, but blood crystals were plentiful.

From stained preparations of the blood I obtained nothing very definite, there appeared to be two or three different kinds of organism; but it is only fair to state that the chemical and not the microscopical inquiry was the one that most concerned me. If on re-examining the cover-glass preparations I should find anything definite it shall be recorded.

The urine of the purpuric patient was submitted to a qualitative examination; it was acid, had a specific gravity of 1025, was highly albuminous; chlorine and lime were present, sulphuric acid a trace, and no sugar.

The inoculations are interesting; on April 17th I inoculated a guinea-pig with fresh blood on the inside of the thigh; on 25th the leg was much swollen, but the animal was lively and feeding well; on 26th the swelling of the limb was subsiding, but the pig was looking dull, very heavy, cold to the touch, and died during the night of the 27th. At the *post-mortem* examination the bowels and stomach were congested, but no hæmorrhagic spots, heart on both sides gorged with blood; from the blood I inoculated another

\* Colin. Phys. Comparée des Animaux.



guinea-pig and a horse. This second pig looked ill on 30th April, and died on 1st of May. *Post-mortem* examination: Hæmorrhage into the skin for some distance around the point of inoculation. On opening the abdomen the viscera were found bathed in pus, a tumour the size of a small egg was found occupying the roof of the abdomen, and contained on section inspissated pus; the abscess communicated with the bones of the spine. The lungs were spotted all over with hæmorrhagic patches.

The experiment here failed owing to the last subject contracting Pyæmia. I certainly saw no pyæmic appearances in the first animal inoculated. The horse remained healthy, and a third pig inoculated from the second did not contract Pyæmia.

No conclusions of a definite nature can be drawn from the inoculation experiments. They enlarge, however, the field of inquiry. My own belief is that there can be no doubt the disease is of bacterial origin; inoculation experiments have so far failed to communicate the disorder to the horse, but the number made is too few to justify any positive conclusions being drawn.

I should be glad if members of the profession would further the inquiry by sending me cover-glasses smeared with blood from purpuric patients.

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## UNITED EYELIDS AT BIRTH.

BY A. E. G. ROBINSON, M.R.C.V.S., WARRINGTON.

PERHAPS the following peculiar and, to me, unprecedented case, which occurred a short time ago in my practice, may be deemed of sufficient interest and rarity to deserve a place in the pages of the Journal.

On the 22nd of June last I was called upon by Mr. Burgess, Steward for Sir Gilbert Greenall, Bart., Walton Hall, Warrington, who requested my attendance upon a valuable brood-mare, which had foaled early that morning, but about which some anxiety was felt, as she did not appear very well, and still retained the placenta. He also desired me to examine the foal, the animal not being able to see, and apparently without eyes. On my arrival I found the mare somewhat amiss, but nothing very serious. After administering a draught and removing the placenta, I directed my attention to the foal, a fine filly by Lord Winmarleigh's "Jupiter," lying helpless in a corner of the box. The attendant informed me that he had made repeated attempts to induce the animal to suck, but it appeared to be without eyes, and he could make nothing of it. On examination, I found complete and firm union existing between the eyelids, nothing but a faint line across the orbit indicating the position of the eyeball, and a small opening, about the

size of a pin's head, immediately over the situation of the inner canthus. I held very grave doubts as to whether the eyeballs were developed, but determined to at once decide the matter by an operation. The foal being placed in a favourable position for light, and held on its side by Mr. Burgess and three attendants, I attempted to insert into the small opening over the inner canthus the point of a fine, sharp-pointed bistoury, but met with considerable difficulty, owing to the impossibility of retaining the head for a sufficient time in the required fixed position. Eventually, however, I succeeded in introducing the point of the instrument, and steadily directed its course underneath and along the line faintly visible across the orbit. A trifling flow of blood resulted from the division, but it was soon arrested by the application of a sponge and cold water, after which, to our intense satisfaction, the eyeball was discovered perfect and intact. A similar operation was then performed upon the other eye, with an equally satisfactory result; and after some little time devoted to cold water applications by means of sponge and wet cloth, the patient was allowed its liberty, of which it took immediate advantage, by springing up, uttering a lively neigh, and was soon in diligent search for sustenance, the dam responding to its familiarity with evident satisfaction. Previous to this she had appeared perfectly oblivious of its existence. The after treatment consisted simply of a mild astringent lotion.

The foal continues lively and well, little, if any, evidence remaining of anything unusual having occurred.

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## CONGESTION OF THE LIVER AND PNEUMONIA.

BY W. S. ADAMS, FIRST-CLASS ARMY VETERINARY SURGEON, REMOUNT DEPOT, HOSUR, INDIA.

IN this paper I wish to speak of that form of disease, or rather complication of diseases, from which horses die on the voyage from Australia to India, and from which many succumb shortly after their landing in this country, and are commonly said to die of "Lungs." The immediate cause of death is certainly often "Hydrothorax" or "Pneumonia," although *post-mortem* examinations show other organs to be extensively diseased.

Disease of any vital organ, either in its acute or chronic stage, is seldom found uncomplicated; for the physiological action of the one is so intimately connected with that of others, that abnormal action of one organ must injuriously affect others. This connection between two diseases, or the disease of one organ by sym-



pathy with that of another, is most remarkable in the cases of Pneumonia and Disease of the Liver, of which I now wish to write. I will, in the first place, quote from my note book the following illustrative cases which have come under my notice :—

1. A recently-received waler, condition wretched. Leading symptoms: High fever, which was persistent; visible mucous membranes, of a dull brick red and yellow colour; breathing greatly distressed, breath very offensive. Died. *Post-mortem* examination showed liver enlarged (weight 18 lbs.), soft and friable and pale in colour; shreds of lymph on the surface of the liver and diaphragm, kidneys enlarged and highly congested (weight 4 lbs. and 3 lbs.); lungs in a state of suppurative inflammation, containing numerous small abscesses; but a small amount of effusion into the thorax.

2. A recently-received waler. In a very weakly state. Symptoms: Cough, discharge from nostrils, breath offensive, œdematous swellings beneath jaws and in front of the chest. Fever slight, which increased. This was a lingering case, which terminated suddenly in Hydrothorax. *Post-mortem* examination showed liver enlarged (weight 25 lbs.), and softened kidneys congested (weight 4 lbs. and 3 lbs.), lungs hepatised, copious serous effusion into the thorax.

3. Horse received the previous day. Condition good. Admitted to the sick lines in a dying state. *Post-mortem*—Liver greatly enlarged (not weighed) and diseased, lungs in a sphacelitic state.

4. Hepatitis. Recently received, showing the usual symptoms, extreme fever temperature  $106\frac{2}{5}^{\circ}$ , slow recovery.

5. Congestion of the liver and pneumonia—a protracted case. Immediate cause of death, Hydrothorax. *Liver greatly enlarged and diseased* (weight 21 lbs.).

6. Chronic disease of the liver. Horse in poor condition—a protracted case. *Post-mortem* examination showed liver to be in a chronic state of disease (weight, 23 lbs.). In this case the lungs were not seriously affected.

7. Congestion of the liver and Hydrothorax. Horse in poor condition. Terminated fatally very rapidly. *Post-mortem* examination showed liver enlarged, softened, and completely disorganised (not weighed); lungs congested, and copious effusion into the thorax, which was the immediate cause of death.

8. This case, which recovered, I will quote more fully, as it has recently occurred, and there are points of special interest. A horse in fair condition was, on arrival, found to be greatly distressed, breathing rapid and short, breath very hot but not offensive. Visible mucous membranes were of the characteristic dull, brick-red colour, pulse rapid and small, temperature  $103\frac{2}{5}^{\circ}$ ; no fæces

were passed. I gave at once a saline laxative, and later on, as the horse was much exhausted, I gave a stimulant. On the following day the symptoms were aggravated. Temperature  $104^{\circ}$ . The horse had not laid down, and had an anxious expression, but the bowels had been freely moved. On auscultation I could detect effusion into the thorax, and feared I should have a fatal case, such as above described. I resolved at once to tap the thorax, which I did with a small trocar; I succeeded only in drawing off a small quantity of fluid. The patient remained in a critical state till the seventh day after admission, when there was a decided fall in the temperature, which had continued high, varying from  $104\frac{2}{5}^{\circ}$  to  $102^{\circ}$ , and the horse now laid down for a short time, at first for about twenty minutes only. From this time there was a gradual improvement, and the case did well.

In this case there were some of the worst symptoms, but, on the other hand, there were throughout symptoms which gave hope of a favourable termination. The bad symptoms were the continued fever, the refusal to lie down, the condition of the visible mucous membranes, the distress in breathing, and the certain evidence of effusion into the chest. The hopeful symptoms were the absence of any offensive smell, either from the breath or from the secretions of the horse, which are usually very noticeable; the absence of persistent constipation, and the readiness with which the horse took the light nourishment offered to him.

These cases have been taken from my note-book, which extends over a number of years, and although when collected they seem numerous they are not really so, for they are from many hundreds of horses, and the percentage of deaths after the arrival of the horses at the depôt is very small. I am not in a position to say what the average percentage of deaths amongst the horses on the voyage from Australia is, but in nearly every shipment we hear of several deaths from "Lungs."

It will be observed that the prominent features in each of the *post-mortem* appearances are the diseased state of the lungs and liver, and it is remarkable that the immediate cause of death has been, in several cases, the sudden effusion into the cavity of the thorax. In one instance which I have recorded, death was due to suppurative inflammation of the lungs, and there was but little effusion into the thorax; but in this case also the liver was much enlarged and diseased. In the majority of instances the whole system was disorganised, and death was frequently caused by rapid effusion into the thorax, and the horse is said to have died of "Lungs." I, however, wish to urge that the primary seat of disease is probably the *liver*, and that the disease of the lungs only occurs secondarily, and sympathetically to that of the liver, possibly



brought about by some extraneous acting on cause an already diseased animal, such as a sudden chill, etc.

Amongst a recently landed shipment of horses there are always many weakly and emaciated animals ; and it is often difficult to detect absolute disease, which may be in a latent state, and sometimes, as in case No. 3, above quoted, the horse may be in good condition, yet at the same time be incurably diseased.

I think it is generally recognised that structural disease of the liver, especially disease in which enlargement of that organ takes place, is slow in its progress. In four of the above-quoted cases the liver weighed 18, 24, 21, and 23 pounds respectively. Taking the normal weight of the liver of the horse to be about 11 or 12 pounds, this increase in weight was very great, and must have been going on for some time. I believe it is towards the end of the voyage from Australia that horses die from the so-called "Lungs"; some die shortly after being landed. It is not till the whole system has become disorganised that the fatal disease of the lungs occurs. Some may say that it is of little consequence where the disease commences, as the termination is known ; but this is the point I would urge for inquiry, for it is by attacking disease at the outset that we may be able to check its progress, and possibly to prevent fatal consequence.

The cause must be primarily sought for, and I do not think it will be far to seek. The horses must be followed from the time they are shipped in Australia, and their condition and general health noted ; then the arrangements on board ship, the amount of space and the precautions taken for thorough ventilation and sanitation ; also the feeding of the animals on board. Provided that horses are in good health and in fair condition at the time of embarkation, and if the boardship arrangements for feeding and watering, ventilation and sanitation, are good, with a fair voyage, bar accidents, there is no reasons why horses should not be landed in fair or even good condition. At the same time over-crowding, injudicious feeding, and defective ventilation and sanitation would—especially in the voyage through the tropics, as from Australia to India—be sufficient to induce either disease of the liver or lungs, or, as we find from experience, both diseases.

The fatal cases which have come under my notice are all similar in the symptoms shown, but there is much variation in the intensity of these symptoms. In all, the visible mucous membranes are of a characteristic yellowish brick-red appearance, and petechiated, showing the blood to be in an almost poisoned condition ; the majority have that peculiar symptom of utter weakness of the intestinal tract, viz., relaxation of the sphincter ani and the passage of flatus, and occasional small pellets of fæces covered with mucus ;

and in the latter stages a sour smell pervades the patient, emanating from the lungs and from the body. The degree of Fever present varies greatly, and I think it is a favourable symptom if the temperature is high at first and then falls, although it may rise again ; but I have found that a persistent high temperature is indicative of the progress of Lung disease. The termination of this congestion and disorganisation of the liver is not invariably the sequent fatal disease of the lungs ; horses sometimes linger, and eventually die from utter collapse of the vital organs ; dropsical effusions take place into the limbs, head, and beneath the abdomen ; the animal, I consider, really dies from blood poisoning. Here I would note that it is remarkable that although no fatal case of Pneumonia or Hydrothorax occurred, which was not associated with disease of the liver, fatal cases of disease of that organ occur unconnected with disease of the Lungs. The pathology is, I consider, briefly this—The horses are in a state of enforced inactivity, well fed, and continuously in a heated atmosphere ; this alone would be sufficient to induce active congestion of the liver, even if the arrangements with regard to ventilation and sanitation were all that could be desired. This congestion of the liver being unrelieved continues till the organ becomes disorganised and unable to carry on its function, and the blood itself becomes vitiated, the process of digestion and assimilation is interfered with, and in the majority of cases the systemic functions are sympathetically involved. I am of opinion that it is when the system is quite broken down by the inaction or perverted action of that most important organ, the liver, that the disease of the lungs sets in ; this may or may not be traceable to some extraneous cause, such as a chill or sudden change of condition or change of climate.

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## Editorial.

### PASTEUR'S TREATMENT OF RABIES AND HYDROPHOBIA.

THE report of the Committee appointed by Government to inquire into the value of M. Pasteur's protective and preventive treatment of Rabies and Hydrophobia is now issued, and we publish as much of it as may interest members of the veterinary profession, omitting that portion which has reference to the details of persons bitten by rabid dogs, which formed part of the Committee's investigation. As will be observed, the report deals not only with the work that has been done at the Pasteur institute in Paris, and its results, but gives evidence that the Committee has been careful to test M. Pasteur's statements as to the efficacy of his inoculations, by carrying out a series of experiments at the Brown Institution, which, independent and crucial, as it were, verify and confirm that great man's conclusions, and support his claim to one of the greatest discoveries in modern medicine. These experiments go to demonstrate that experimental pre-inoculations with weakened virus will protect from the effects of accidental inoculation with rabific virus, and though the experimental investigations do not throw much light on the value of post-inoculations, yet there is much reason to believe that they are of value in preventing the development of the malady in those who have been bitten by mad dogs—a view which is largely corroborated by the statistics published as to the results of the inoculations practised upon a very large number of persons of nearly all nationalities, by Pasteur and his assistants.

So far the evidence is on the side of preventive and protective inoculation for Rabies, but the question of its practicability has yet to be solved. Knowing that the disease depends solely for its maintenance and dissemination on the bites inflicted by rabid animals, and that therefore there should be no transmissible malady of man or beast more easily extinguished, it is a matter for decision as to whether it would not be more advantageous in every way to extirpate it completely by the adoption of certain sanitary police measures, than to tolerate its existence among us, and at the same time to keep up one or more establishments where a certain number of rabbits were dying every day from the inoculated disease, so that their spinal cords might be available for protecting persons who might chance to be wounded by suspected or really rabid dogs. We fancy we know what the answer of those who understand the question would be. If the Pasteur measures were adopted, without any proper sanitary measures for the limitation or extinction of Rabies, it would signify not only the expense and trouble of having such establishments, but also the great inconvenience of people having to attend them—travelling for perhaps long distances, and waiting several days for the operation to be completed; while, as the statistics show, a certain, if small, proportion of those inoculated would die from the naturally induced disorder. At the same time, unless all animals in the country could be protectively inoculated, which we may regard as

impossible, the mortality among them from this scourge would not be diminished. Though, therefore, we admit the great value of Pasteur's system of inoculation, we unhesitatingly give our preference for that which will extinguish the disease altogether in these islands within a given period—say twelve months, and so render such a round-about and partial measure as that insisted upon by the great Frenchman altogether unnecessary. A Committee of the House of Lords has been sitting for some days taking evidence on Rabies in dogs, with a view, it may be supposed, to legislative measures, and we shall be much surprised if the conclusion arrived at is not strongly in favour of the “stamping out” system, as against Pasteur's. If such a conclusion were adopted and acted upon with judgment and vigour, it would benefit not only mankind, but several species of animals throughout all time.

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#### REPORT OF COMMITTEE OF ENQUIRY INTO M. PASTEUR'S TREATMENT OF HYDROPHOBIA.

THE following is the report, just issued, of the Committee appointed by the Government to enquire into Pasteur's treatment of Hydrophobia:—

*To the RIGHT HONOURABLE CHARLES THOMSON RITCHIE, M.P., President  
of the Local Government Board.*

SIR,—In accordance with the instructions contained in a letter dated April 12, 1886, from your predecessor, the Right Honourable Joseph Chamberlain, M.P., appointing us to be a Committee to enquire into M. Pasteur's treatment of Hydrophobia, we beg leave to present to you the following report.

In order to answer the several questions involved in the enquiry, we found it necessary that some of the members of the Committee should, together with Mr. Victor Horsley, the Secretary, visit Paris, so as to obtain information from M. Pasteur himself, and observe his method of treatment, and investigate a considerable number of the cases of persons inoculated by him; and, further, that a careful series of experiments should be made by Mr. Horsley on the effects of such inoculation on the lower animals. The detailed facts of these observations and experiments are placed in the Appendix to this report; a summary of them, and the conclusions which we believe may be drawn from them, are given in the next following pages.

The experiments by Mr. Horsley entirely confirm M. Pasteur's discovery of a method by which animals may be protected from the infection of Rabies. The general facts proved by them may be thus stated.

If a dog, or rabbit, or other animal, be bitten by a rabid dog and die of Rabies, a substance can be obtained from its spinal cord which, being inoculated into a healthy dog or other animal, will produce Rabies similar to that which would have followed directly from the bite of a rabid animal, or differing only in that the period of incubation between the inoculation and the appearance of the characteristic symptoms of Rabies may be altered.

The Rabies thus transmitted by inoculation may, by similar inoculations, be transmitted through a succession of rabbits with marked increase of intensity.

But the virus in the spinal cords of rabbits that have thus died of inoculated Rabies may be gradually so weakened or attenuated, by drying the cords, in the manner devised by M. Pasteur and related in the Appendix (page 21), that, after a certain number of days' drying, it may be injected



into healthy rabbits or other animals without any danger of producing Rabies.

And by using, on each successive day, the virus from a spinal cord dried during a period shorter than that used on the previous day, an animal may be made almost certainly secure against Rabies, whether from the bite of a rabid dog or other animal, or from any method of subcutaneous inoculation.

The protection from Rabies thus secured is proved by the fact that, if some animals thus protected and others not thus protected be bitten by the same rabid dog, none of the first set will die of Rabies, and, with rare exceptions, all of the second set will so die.

It may, hence, be deemed certain that M. Pasteur has discovered a method of protection from Rabies comparable with that which vaccination affords against infection from Small-pox. It would be difficult to over-estimate the importance of the discovery, whether for its practical utility or for its application in general pathology. It shows a new method of inoculation, or, as M. Pasteur sometimes calls it, of vaccination, the like of which it may become possible to employ for protection of both men and domestic animals against others of the most intense kinds of virus.

The duration of the immunity from Rabies which is conferred by inoculation is not yet determined; but during the two years that have passed since it was first proved there have been no indications of its being limited.

The evidence that an animal may thus, by progressive inoculations, be protected from Rabies suggested to M. Pasteur that if any animal or any person, though unprotected, were bitten by a rabid dog, the fatal influence of the virus might be prevented \* by a timely series of similar progressive inoculations. He has accordingly, in the institution established by him in Paris, thus inoculated a very large number of persons believed to have been bitten by rabid animals; and we have endeavoured to ascertain with what amount of success he has done so.

The question might be answered with numerical accuracy if it were possible to ascertain the relative numbers of cases of Hydrophobia occurring among persons of whom, after being similarly bitten by really rabid animals, some were and some were not inoculated. But an accurate numerical estimate of this kind is not possible. For—

1. It is often difficult, and sometimes impossible, to ascertain whether the animals by which people were bitten, and which were believed to be rabid, were really so. They may have escaped, or may have been killed at once, or may have been observed by none but persons quite incompetent to judge of their condition.

2. The probability of Hydrophobia occurring in persons bitten by dogs that were certainly rabid depends very much on the number and character of the bites; whether they are on the face or hands or other naked parts; or, if they have been inflicted on parts covered with clothes, their effects may depend on the texture of the clothes, and the extent to which they are torn; and, in all cases, the amount of bleeding from the wounds may affect the probability of absorption of virus.

3. In all cases, the probability of infection from bites may be affected by speedy cauterising or excision of the wounded parts, or by various washings or other methods of treatment.

4. The bites of different species of animals, and even of different dogs, are,

\* The terms referring to "preventive" treatment will be used for that designed to prevent the occurrence of the disease in one already infected; those referring to "protective" treatment for that designed to protect a man or an animal from the risk of becoming infected. And it may be well to state that, though the usual custom is followed of employing the name of "Hydrophobia" for the disease in men, and of "Rabies" for that in animals, they are really the same disease.

probably, for various reasons, unequally dangerous. Last year, at Deptford, five children were bitten by one dog and all died; in other cases, a dog is said to have bitten twenty persons, of whom only one died. And it is certain that the bites of rabid wolves, and probable that those of rabid cats, are far more dangerous than those of rabid dogs.

The amount of uncertainty due to these and other causes may be expressed by the fact that the percentage of deaths among persons who have been bitten by dogs believed to have been rabid, and who have not been inoculated or otherwise treated, has been, in some groups of cases, estimated at the rate of only 5 per cent., in others at 60 per cent., and in others at various intermediate rates. The mortality from the bites of rabid wolves, also, has been, in different instances, estimated at from 30 to 95 per cent.

To ascertain, as far as possible, the influence of these sources of fallacy in cases inoculated by M. Pasteur, the members of the Committee who went to Paris requested him to enable them to investigate, by personal enquiry, the cases of some of those who had been treated by him. He at once, and very courteously, assented, and the names of 90 persons were taken from his notebooks. No selection was made, except that the names were taken from his earliest cases, in which the periods since inoculation were longest, and from those of persons living within reach in Paris, Lyons, and St. Etienne.

The notes made on the spot concerning all these cases are given in the Appendix, and they include, as far as was possible, the evidence whether the dogs deemed rabid were really so, the situation and kind of bites, the immediate treatment of them, the statements of medical practitioners and veterinary surgeons to whom any useful facts were known.\*

Among the 90 cases there were 24 in which the patients were bitten on naked parts by undoubtedly rabid dogs, and the wounds were not cauterised or treated in any way likely to have prevented the action of the virus; there were 31 in which there was no clear evidence that the dog was rabid; others in which the bite, though inflicted by undoubtedly rabid animals, having been through clothes, may thus have been rendered harmless. Among these, therefore, it is probable that, even if they had not been inoculated, few would have died. Still, the results observed in the total of the 90 cases may justly be compared with those observed in large numbers of cases similar to these as regards the uncertainties of infection, but not inoculated. The estimates published as to the mortalities in such unassorted cases are, as we have said, widely various. We believe that among the 90 persons, including the 24 bitten on naked parts, not less than eight would have died if they had not been inoculated. At the time of the enquiry, in April and May, 1886, which was at least eighteen weeks since the treatment of the bites, not one had shown any signs of Hydrophobia, nor has anyone of them since died of that disease.

Thus, the personal investigation of M. Pasteur's cases by members of the Committee was, so far as it went, entirely satisfactory, and convinced them of the perfect accuracy of his records.

After the first few months in which M. Pasteur practised his treatment, he was occasionally obliged, in order to quiet fears, to inoculate persons who believed that they had been bitten by rabid animals, but could give no satisfactory evidence of it. It might, therefore, be deemed unjust to estimate the total value of his treatment in the whole of his cases as being more than is represented by the difference between the rate of mortality observed in them and the lowest rate observed in any large number of cases not inoculated. This lowest rate may be taken at 5 per cent. Between October, 1885, and

\*The Committee are much indebted to M. Arloing, Director of the Veterinary School at Lyons; M. Savary, veterinary surgeon at Brie-Comte-Robert; and M. Charlois, veterinary surgeon at St. Etienne, for assistance in their enquiries.



the end of December, 1886, M. Pasteur inoculated 2,682 persons, including 127 who went from this country. Of the whole number, at the rate of 5 per cent., at least 130 should have died. At the end of 1886, the number of deaths stated by M. Vulpian, speaking for M. Pasteur, was 31, including 7 bitten by wolves, in three of whom the symptoms of Hydrophobia appeared while they were under treatment, and before the series of inoculations were complete. Since 1886 two more of those inoculated in that year have died of Hydrophobia.

The number of deaths assigned by those who have sought to prove the inutility of M. Pasteur's treatment is, as nearly as we can ascertain, 40 out of the 2,682; and in this number are included the seven deaths from bites by wolves, and probably not less than four in which it is doubtful whether the deaths were due to hydrophobia or to some other disease. Making fair allowance for uncertainties and for questions which cannot now be settled, we believe it sure that, excluding the deaths after bites by rabid wolves, the proportion of deaths in the 2,634 persons bitten by other animals was between 1 and 1·2 per cent., a proportion far lower than the lowest estimated among those not submitted to M. Pasteur's treatment, and showing, even on this lowest estimate, the saving of not less than 100 lives.

The evidence of the utility of M. Pasteur's method, indicated by these numbers, is confirmed by the results obtained in certain groups of his cases.

Of 233 persons bitten by animals in which Rabies was proved, either by inoculation from their spinal cords, or by the occurrence of Rabies in other animals or in persons bitten by them, only 4 died. Without inoculation it would have been expected that at least 40 would have died.

Among 186 bitten on the head or face by animals in which Rabies was proved by experimental inoculations, or was observed by veterinary surgeons, only 9 died, instead of at least 40.

And of 48 bitten by rabid wolves only 9 died; while, without the preventive treatment, the mortality, according to the most probable estimates yet made, would have been nearly 30.

Between the end of last December, and the end of March, M. Pasteur inoculated 509 persons bitten by animals proved to have been rabid, either by inoculation with their spinal cords, or by the deaths of some of those bitten by them, or as certified by veterinary surgeons. Only 2 have died, and one of these was bitten by a wolf a month before inoculation, and died after only three days' treatment. If we omit half of the cases as being too recent, the other 250 have had a mortality of less than 1 per cent., instead of 20 or 30 per cent.

It has been objected that the number treated by M. Pasteur, which, from October, 1885, to the end of 1886, included 1,929 French and Algerians, was much greater than could reasonably be supposed to have been bitten by rabid animals. But there had hitherto been no careful registration of such cases, and the numbers that have occurred in the present year are not less than in the same part of last year, when the alarm about Hydrophobia was greatest.

From the evidence of all these facts, we think it certain that the inoculations practised by M. Pasteur on persons bitten by rabid animals have prevented the occurrence of Hydrophobia in a large proportion of those who, if they had not been so inoculated, would have died of that disease. And we believe that the value of his discovery will be found much greater than can be estimated by its present utility, for it shows that it may become possible to avert by inoculation, even after infection, other diseases besides Hydrophobia. Some have, indeed, thought it possible to avert Small-pox by vaccinating those very recently exposed to its infection; but the evidence of this is, at the best, inconclusive; and M. Pasteur's may justly be deemed the first proved method of overtaking and suppressing by inoculation a process of

specific infection. His researches have also added very largely to the knowledge of the pathology of Hydrophobia, and have supplied what is of the highest practical value, namely, a sure means of determining whether an animal, which has died under suspicion of Rabies, were really affected with that disease or not.

The question has been raised whether M. Pasteur's treatment can be submitted to without danger to health or life ; and in answering it, it is necessary to refer to two different methods of inoculation which he has practised, and which are fully described in the appendix.

In the first, which may be called the ordinary method, and which has been employed in the very large majority of cases, the preventive material obtained from the spinal cords of rabbits that have died of Rabies derived, originally, from rabid dogs is injected under the skin, once a day for ten days, in gradually increasing strengths.

In the second or intensive method (*méthode intensive*) which M. Pasteur adopted for the treatment of cases deemed especially urgent, on account either of the number and position of the bites, or of the long time since their infliction, the injections, gradually increasing in strength, were usually made three times on each of the first three days, then once daily for a week, and then in different degrees of frequency for some days more. The highest strength of the injections used in this method was greater than the highest used in the ordinary method, and was such as, if used at first and without the previous injections of less strength, would certainly produce Rabies.

By the first or ordinary method, there is no evidence or probability that anyone has been in danger of dying, or has in any degree suffered in health even for any short time. But after the intensive method, deaths have occurred under conditions which have suggested that they were due to the inoculations rather than to the infection from the rabid animal.

There is ample reason to believe that, in many of the most urgent cases, the intensive method was more efficacious than the ordinary method would have been. Thus, M. Pasteur mentions that of 19 Russians bitten by rabid wolves, 3 treated by the ordinary method died, and the remaining 16, treated by the intensive method, survived : and he contrasts the cases of 6 children, severely bitten on the face, who died after the ordinary treatment, with those of 10 similarly bitten children who were treated by the intensive method, and of whom none died ; and M. Vulpian reports that, of 186 persons badly bitten by animals that were most probably rabid, 50 treated by the intensive method survived, and of the remaining 136 treated by the ordinary method, 9 died.

The rate of mortality after the intensive method was not greater than that after the ordinary method ; for among 624 patients thus treated, only 6 died, or, counting one doubtful case, 7. But that which excited suspicion was the manner of death in some of them ; and this manner was observed in a man named Goffi, sent from England. On the 4th of last September he was severely bitten at the Brown Institution by a rabid cat to which, in spite of repeated warnings, he exposed his naked hand. Twelve wounds were inflicted. They were at once treated with pure carbolic acid, and six hours later, he was put under the influence of chloroform at St. Thomas's Hospital, the wounded portions of skin were freely excised, and the wounds thus made were treated with carbolic acid. On the same evening he was sent to Paris, and on the following morning M. Pasteur commenced the intensive treatment, and it was continued during 24 days. During all this time the man was repeatedly intoxicated.\* He once fell into the Seine, and while crossing the Channel on his return home he was severely chilled.

\* Other cases, as well as this, have led M. Pasteur to believe that the risk of death from Hydrophobia is much increased by habits of drunkenness.



On the 10th of October he returned to his work, and appeared to be in his usual health ; but he became unwell, with pain in the abdomen, like Colic, and with pain in the back. On the 18th he had partial motor paralysis in the lower limbs, and on the 19th complete motor paralysis of those limbs and of the trunk, and partial motor paralysis of the upper limbs and face. He was taken to St. Thomas's Hospital, where he died on the 20th.

To the last he was free from all the usual symptoms of Hydrophobia, and the progress of his disease and the manner of his death were so similar to those of what is described as acute ascending Paralysis, or Landry's Paralysis, that a verdict to this effect was given at a Coroner's inquest. But the certainty that his death was due to the virus of Rabies was proved by experiments by Mr. Horsley. A portion of his spinal cord was taken to provide material for inoculations, and rabbits and a dog inoculated with it died with characteristic signs of paralytic Rabies, such as usually occurs in rabbits.

In most of the other cases of death after treatment by the intensive method, the symptoms have been nearly the same as those just related ; but in none of them had the same test of death from Hydrophobia been applied. The likeness of the symptoms to those of the form of Rabies called dumb or paralytic, usually observed in rabbits, has suggested, as we have said, that the deaths were due not to the virus of the rabid dog or cat, but to that injected from the spinal cord of the rabbit. But this is far from certain. In the case of Goffi, especially, the incubation period was such as would have followed the bite of the cat, not the inoculation of highest intensity ; and the incubation period in the rabbits and dog inoculated from his spinal cord were such as have been observed after similar inoculations with virus derived, not only from rabbits inoculated in series by M. Pasteur, but from a dog, a cat, and a wolf, that died of ordinary Rabies. It may well have been, therefore, that the intensive inoculations in him and in the other persons who died after them were not themselves destructive, but that they failed to prevent the Rabies which was due to the bites. They may also have modified the form in which the Rabies manifested itself, giving it the characters of the paralytic Rabies usual in rabbits, instead of the convulsive or violent form usually, but not always,\* observed in man after bites of cats or dogs.

The question is likely to remain undecided ; for to avoid the possible, however improbable, risk of his intensive treatment, M. Pasteur has greatly modified it, and even in this modified form employs it in none but the most urgent cases.

The consideration of the whole subject has naturally raised the question whether Rabies and Hydrophobia can be prevented in this country.

If the protection by inoculation should prove permanent, the disease might be suppressed by thus inoculating all dogs ; but it is not probable that such inoculation would be voluntarily adopted by all owners of dogs, or could be enforced on them.

Police regulations would suffice if they could be rigidly enforced. But to make them effective it would be necessary : (1) that they should order the destruction, under certain conditions, of all dogs having no owners, and wandering in either town or country ; (2) that the keeping of useless dogs should be discouraged by taxation or other means ; (3) that the bringing of dogs from countries in which Rabies is prevalent should be forbidden or subject to quarantine ; (4) that, in districts or countries in which Rabies is prevalent, the use of muzzles should be compulsory, and dogs out of doors, if not

\* Cases of paralytic Hydrophobia have been observed, though rarely, in men bitten by rabid animals, and not treated by inoculation. It may, indeed, be suspected that at least some of the cases of "acute ascending Paralysis" may have been cases of this form of Hydrophobia, although, in the complete absence of the usual violent symptoms, no suspicion of the source of the diseases was entertained.

muzzled or led, should be taken by the police as "suspected." An exception might be made for sheep dogs and others while actually engaged in the purposes for which they are kept.

There are examples sufficient to prove that by these or similar regulations Rabies, and, consequently, Hydrophobia, would be in this country "stamped out," or reduced to an amount very far less than has hitherto been known.

If it be not thus reduced it may be deemed certain that a large number of persons will every year require treatment by the method of M. Pasteur. The average annual number of deaths from Hydrophobia during the ten years ending 1885 was, in all England, 43; in London alone, 8·5. If, as in the estimates used for judging the utility of that method of treatment, these numbers are taken as representing only five per cent. of the persons bitten, the preventive treatment will be required for 860 persons in all England; for 170 in London alone. For it will not be possible to say which among the whole number bitten are not in danger of Hydrophobia, and the methods of prevention by cautery, excision, or other treatment, cannot be depended on.—We have the honour to be, sir, your obedient servants,

(Signed)

JAMES PAGET, *Chairman.*

T. LAUDER BRUNTON.

GEORGE FLEMING.

JOSEPH LISTER.

RICHARD QUAIN.

HENRY E. ROSCOE.

J. BURDON SANDERSON.

VICTOR HORSLEY, *Secretary.*

June, 1887.

#### APPENDIX.

##### *A.—Abstract Report of Mr. Horsley's Experiments.*

THE first object of the experiments was to test M. Pasteur's method of transmitting Rabies by inoculation, and to compare its effects with those of Rabies due to the bites of dogs found rabid in the streets.\*

Through the kindness of M. Pasteur, two rabbits inoculated by him were placed at the disposal of the Committee on the 5th of May, 1886, and were conveyed within twenty-four hours safely to the Brown Institution, where the experiments were carried out by Mr. Horsley.

In these two rabbits the first symptoms of Rabies appeared on the 11th and 12th of May, and the disease followed exactly the course described by M. Pasteur.

At first the animals appeared dull, but continued to take food readily until symptoms of Paralysis appeared. The first of these symptoms was commencing paralysis of motion of the hind legs, not accompanied by any loss of sensibility. The paralysis soon extended to the muscles of the fore legs, and later to those of the head, and the animals died comatose.

After *post-mortem* examination portions of the spinal cord of each of these rabbits were crushed, according to M. Pasteur's method, in sterilised broth, and the liquid so obtained was injected beneath the dura mater into four rabbits and the same number of dogs, all being first rendered insensible with chloroform or ether. †

Of the four rabbits so inoculated, the first two showed the first symptoms seven days after the inoculation, the third and fourth on the sixth day. The symptoms as well as the incubation period exhibited by these rabbits were

\* This expression is adopted from that usual in France, "rage des rues."

† All the experiments performed in this inquiry were thus made painless.



exactly the same as were observed in those brought from M. Pasteur's laboratory. Careful notes and photographs were taken in the case of all the animals, in order that the constant and specific nature of the disease might be demonstrated by observations during life and after death. It was also observed that during the incubation period the temperature of the body remained normal, that is, about  $39.4^{\circ}\text{C}$ . With the first definite symptom the temperature rose to about  $40.4^{\circ}\text{C}$ ., which is the temperature usually observed during the first day of the obvious illness. By the next day it began to fall, and on the third day, after the appearance of the first symptom, it averaged  $37.5^{\circ}\text{C}$ . On the last day it was always below normal, and on one occasion fell before death to  $24^{\circ}\text{C}$ . The animals did not appear to suffer any pain whatever in the course of the disease. They were free from the spasms which, in the earlier stages of the malady in man, form so painful a feature of the disease, and, indeed, the disease in them resembled throughout that rapidly fatal, but painless, disease of man known as acute ascending Paralysis (Foot note, Report).

The *post-mortem* appearances in the rabbits were remarkably uniform. As a rule nothing abnormal, save congestion, presented itself either in the brain, spinal cord, heart, blood vessels, or serous membranes. The larynx, pharynx, and, more especially, the epiglottis, and the root of the tongue, were frequently intensely congested. The lungs showed almost invariably capillary congestion; and sometimes small patches resembling broncho-pneumonia were observed. The mucous membrane of the stomach was very markedly congested, and there were at its cardiac extremity numerous hæmorrhages.\* The constancy of these appearances was most remarkable and corresponded in every particular with those subsequently observed in rabbits which had died of Rabies from the bite of rabid dogs.

Of the four dogs inoculated, the first showed on the eighth day after inoculation an alteration in the voice and commencing excitement; on the following day the excitement became excessive, and the bark was quite characteristic; on the eleventh day the dog was aggressive, notwithstanding slight paralysis of the legs; on the twelfth day the paralysis had increased, and on the next day there was complete paralysis and coma, and death occurred on the fifth day after the onset of the symptoms.

The second dog showed the first symptom on the ninth day after inoculation, when it was very dull and partially paralysed; its bark was characteristic. Next day the paralysis was almost complete, and on the twelfth day the animal died. This was therefore a case of the rapid paralytic form; whilst in the first dog the disease was of the ordinary furious form of Rabies terminating in paralysis.

The third dog showed the first symptom on the ninth day after inoculation, and from that time became gradually paralysed, and died on the sixteenth day.

The fourth dog showed the first symptom in from eight to nine days after inoculation, and during the first day was extremely aggressive; on the two following days the characteristic bark was observed; and on the twelfth day there was paralysis of the hind legs; it died on the thirteenth day. Thus the furious form and the paralytic or dumb form of Rabies were represented in equal numbers, whereas, in the usual mode of infection by biting, the former is more prevalent.

The *post-mortem* appearances were as follows: The brain and central nervous system were in some of the dogs the seat of considerable congestion; in others these organs appeared normal. The serous membranes were perfectly normal; the larynx especially, and, sometimes, the pharynx, were congested; the lungs always congested, especially in the lower lobes; the heart

\* In some, signs of *post-mortem* digestion were found.

normal; the blood usually fluid, occasionally with *post-mortem* clots; the stomach was always found to contain foreign bodies, such as straw; and its mucous membrane was congested, frequently showing numerous hæmorrhages; the small intestine was always empty, and the large glandular organs showed venous congestion.

For the purpose of exact comparison of the disease just described with that produced when Rabies is communicated to the rabbit in the ordinary way, some rabbits previously narcotised with ether were caused to be bitten by rabid dogs of the streets, or were inoculated by trephining with material obtained from the spinal cord of dogs or other animals which had died of rabies, and in one instance from that of a man who had died with Hydrophobia.

Four series of experiments of observations in which rabbits were bitten by rabid dogs from the streets were made. In one of them the dog by which the rabbit was bitten exhibited the dumb form, in others the furious form of the disease. In each series excepting the first a large proportion of the rabbits died; the symptoms presenting themselves in these cases were identical with those observed in the rabbits inoculated from M. Pasteur's virus, but the duration of the symptoms was usually longer. As has been stated, rabbits inoculated by M. Pasteur's virus rarely show symptoms during more than three days before death, whereas the rabbits bitten by rabid dogs from the streets often live for a week after the appearance of the first symptoms.

The *post-mortem* appearances in the rabbits dying after having been bitten by rabid dogs of the streets were the same as those already described in rabbits inoculated with the virus from M. Pasteur's rabbits.

In the case of rabbits inoculated by trephining with the virus from animals dying of Rabies of the streets, the incubation period was from fourteen to twenty-one days. In all cases the symptoms were similar to those produced by M. Pasteur's virus, and those of rabbits bitten by rabid dogs from the streets, but, in the prolongation of the disease, approached more closely in character to the latter.

The results of these experiments confirm several of the chief observations made by M. Pasteur; especially—

1. That the virus of Rabies may certainly be obtained from the spinal cords of rabbits and other animals that have died of that disease.
2. That, thus obtained, the virus may be transmitted by inoculation through a succession of animals without any essential alteration in the nature, though there may be some modifications of the form, of the disease produced by it.
3. That, in transmission through rabbits the disease is rendered more intense; both the period of incubation, and the duration of life after the appearance of symptoms of infection, being shortened.
4. That, in different cases, the disease may be manifested either in the form called dumb or paralytic Rabies which is usual in rabbits; or, in the furious form usual in dogs; or in forms intermediate between, or combining, both of these, but that in all it is true rabies.
5. The period of incubation and the intensity of the symptoms may vary according to the method in which the virus is introduced, the age and strength of the animal, and some other circumstances; but however variable in its intensity the essential characters of the disease are still maintained.

The certainty that the virus of Rabies can thus be transmitted without essential change made it desirable, in the next place, to ascertain whether, as M. Pasteur states, it can be so attenuated that it may be inoculated without risk to life, and whether animals thus inoculated are thus made safe from Rabies. The methods for this protective inoculation which M. Pasteur has employed are described in p. 21.



To test them, six dogs were "protected" by injecting subcutaneously the emulsions of spinal cords of rabbits which had died of Rabies; beginning with that of a cord which had been dried for fourteen days, and, on each following day, using that of a cord which had been dried for one day less, till at last that from a fresh cord was used.

None of these dogs suffered from the injections; and when they were completed, the six dogs thus "protected," and two others unprotected, and some rabbits unprotected, were made insensible with ether, and were then bitten by rabid dogs, or by a rabid cat, on an exposed part.

A "protected" dog, No. 1, was bitten on July 8th, 1886, by a dog which was paralytically rabid. It remains perfectly well.

An "unprotected" dog, No. 1, was bitten a few minutes afterwards by the same rabid dog, and died paralytically rabid.

A "protected" dog, No. 2, was bitten on November 6th, 1886, by a dog which was furiously rabid; it remains well. At the same time, four "unprotected" rabbits were bitten by the same rabid dog, and of these two died of Rabies in the usual form (*i.e.*, 50 per cent. of animals bitten).

The same results followed with the "protected" dog, No. 3, and the "unprotected" rabbits, bitten at the same time. The dog still lives, the rabbits died of Rabies.

The "protected" dogs, Nos. 4 and 5, were bitten on January 20, 1887, by a furiously rabid dog; and on the same day the "unprotected" dog, No. 2, and three "unprotected" rabbits were bitten by the same dog. The "protected" dogs remain well; the "unprotected" dog and two rabbits died with Rabies (*i.e.*, 75 per cent. of the animals bitten).

The "protected" dog, No. 6, was bitten on three different occasions by a furiously rabid cat on September 7, 1886; by a furiously rabid dog on October 7, 1886; and by another furious rabid dog on November 6, 1886. It died ten weeks after being bitten for the third time, but not of Rabies. It had been suffering with diffuse Eczema during the whole of the time that it was under observation, and it died of this. At the *post-mortem* examination no indication of Rabies was found; and two rabbits, inoculated by trephining with the crushed spinal cord, showed no sign of Rabies, either during life or when they were killed several months afterwards, in any appearance after death. It was thus made certain that the dog was not rabid.

Thus, all the experiments performed by Mr. Horsley have confirmed those of M. Pasteur, and the experiments last described have shown that animals may be protected from Rabies by inoculations with material derived from spinal cords prepared after M. Pasteur's method. The protection may be deemed somewhat similar to that given by the inoculation for Anthrax or by vaccination for Small-pox, though the theory of the method of inoculation devised by M. Pasteur is very different from that upon which vaccination for Small-pox and inoculation for Anthrax is based. The further step, the prevention of Rabies or Hydrophobia in animals or in persons into whom the virus has already been introduced by bites or otherwise, is considered in the body of the report.

In the course of his experiments, Mr. Horsley observed many interesting facts concerning the modification of the action of the virus according to the method of its inoculation, and the condition of the animal inoculated; but he found nothing to justify a belief that any animal not inoculated is insusceptible of Rabies, or that the disease ever arises spontaneously.\*

Coincidentally with these experiments, some were made by Mr. Dowdeswell for the purpose of ascertaining whether any drugs can protect an animal from Rabies. Their result is recorded in a paper read before the Royal

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\* The minuter facts connected with all these experiments will soon be communicated to one of the scientific societies.

Society, and may be summed up in the statement that Rabies can neither be prevented nor influenced in its course, unless it be for the worse, by any of the drugs that were employed, including allyl alcohol, atropine, benzoate of soda, chloral, cocaine, curare, iodine (dissolved in iodide of potassium), mercuric perchloride, quinine, salol, strychnine, urethan.

Appendix B, containing the report on persons in France examined by members of the Committee, is omitted.

C.—*M. Pasteur's Methods of Preventive Inoculation.\**

M. Pasteur believes that the virus of Rabies is a living micro-organism, and that, like some others, it produces in the tissues it invades an excretory substance, by which, when present in sufficient quantity, its own development and increase are checked, as are those of the yeast ferment by the alcohol produced in the vinous fermentation. In accordance with this theory, he thinks that the spinal cords of animals that have died of Rabies contain both the virus and this excretory substance, which, practically, may be deemed its antidote. He believes, therefore, that by injections of an emulsion from such spinal cords into the systems of animals bitten or inoculated with the virus of Rabies, the antidote may be able, during the period of incubation, to arrest and prevent the fatal influence of the virus. But, in order to avoid the possibility of injecting a still potent virus, M. Pasteur holds that the virus in the spinal cord must be weakened by drying the cord in a pure and dry atmosphere, at a temperature of 20° C.; in which drying the efficiency of the antidote may be reduced to a much less extent than the potency of the virus. By such drying this potency may be so reduced that an emulsion of the dried spinal cord may be injected without any risk of producing Rabies; and this risk is in no measure increased by the daily injections of emulsions from cords dried during a gradually less number of days, and which, though more virulent than those first used, still contain a larger proportion of the antidote than of the virus.

In accordance with this theory, the method of the preventive injections first used by M. Pasteur was adjusted in the following manner :—

Days of Inoculation.	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Days during which the spinal cord had been dried.	14	13	12	11	10	9	8	7	6	5

In consequence of some deaths among those who had been thus treated, M. Pasteur deemed it necessary, in cases of very severe bites, and of persons bitten long before the treatment could be commenced, to increase the intensity of the treatment by more speedily increasing the strength of the injections, by more frequent repetitions of them, and by using on certain days spinal cords dried during only three, two, and one days. Thus in September and October, 1886, he adopted the following formula :—

Days of Inoculation.	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th
Days' drying of the cords	14, 13, 12	11, 10, 9	8, 7	6, 5	4, 3	2	1	6, 5	4, 3	2	1

In very severe and perilous cases this course was repeated even three or four times. It was distinguished as the *méthode intensive*, and among such

\* As derived from the observations made by the Committee, and from a full description supplied by Professor Dr. Grancher, April 11th, 1887.



severe cases it was followed by a marked diminution of mortality (*see* report p. ). But when it appeared possible that it might be dangerous, M. Pasteur changed it for that which he now uses, and which may be thus represented:—

Days of Inoculation	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th
Days' drying of the cords.	14, 13	12, 11	11, 10	10, 10	9, 9	9	8	8	8	7	7	7	6	6	5

The material for injection is prepared by crushing portions of the dried spinal cord, and diffusing them in sterilised broth, free from all risk of putrefaction, decomposition, or any change due to the presence of other micro-organisms; and the injection is made with syringes, through fine tubular needles, into the subcutaneous tissue.

For transmissions of Rabies through rabbits, in order to obtain the spinal cords required for its prevention in other animals, injections of virus of highest intensity are made through minute holes in the skull into the space under the dura mater, or fibrous covering of the brain.

The materials for the protective inoculations are prepared in the same manner as those for the preventive, from spinal cords dried from ten days to one day.

#### STUDY OF THE MICRO-ORGANISMS OF RINDERPEST BY PROFESSOR SAWELJEW, OF ST. PETERSBURG.\*

PROFESSOR SAWELJEW found, in the blood of animals dead of Rinderpest, micrococci, bacilli-forming spores, free spores, and zooglaeæ. When the blood containing these organisms was grown on a solid culture-medium, such as agar-agar, two different sorts of colonies were formed: one, which grew in an oval shape, being composed of bacilli of various sizes, while in the other, which was on the surface of the culture-medium, micrococci, short rods, and bacilli with elliptical-shaped spores were found. When cultivated for three or four generations only, micrococci, diplococci, and chains were found, which were considered by Saweljew to be pure cultivations.

A mouse inoculated with this pure cultivation died the next day, and cultivations taken on solid medium from the blood of this mouse formed both round and diffused colonies, composed of micrococci and bacilli furnished with spores. This cultivation was of a white colour, and mice and rabbits inoculated therewith died in from two to ten days.

The blood of all these animals, when cultivations were made, behaved in exactly the same manner, but the bacillus quickly changed into a micrococcus. With these micrococci, cultivated on a solid medium, Saweljew obtained a bacillus, which again changed into a micrococcus.

At first these colonies, also some stock virus in broth, were of a milky-white colour, which, twenty to thirty days afterwards, changed to a pale yellow, and finally to red, the same result being obtained in a number of experiments, and all the rabbits inoculated from the yellow or red cultures resisted it. Six days after the inoculation of rabbits with the yellow culture, Saweljew drew off some blood from them, which, on being cultivated on solid medium, was found first to contain bacilli, and afterwards micrococci and chains.

\* Translated from the *Recueil de Médecine Vétérinaire*, of 19th February, 1887, by Joshua A. Nunn, F.R.C.V.S., F.R.G.S., Army Veterinary Department, Pietermaritzburg, Natal, South Africa, April 2nd, 1887.

The red colonies, when transplanted, still retained their peculiar colour, and were composed of micrococci, diplococci, filamentæ, and chains.

If the cultivation was made when the original first began to turn red, it became yellow; if at the commencement of the yellow stage, it turned white, with the formation of bacilli. But if the new cultivation was made at the end of the period that the old one had become yellow in, then it remained yellow, and no bacilli were formed.

When deprived of oxygen the cultivations passed but slowly from one period to the other, in from two or three months or more. Carried on in pure oxygen, the growth stopped altogether. Gelatine medium was liquefied, but not agar-agar, and the growth was quicker at a comparatively low temperature.

These experiments are remarkable, as, by most bacteriologists, it is denied that micro-organisms alter their form, *i.e.*, that a bacillus will, under any conditions, become a micrococcus, or *vice versa*.

### THE FITZWYGRAM PRIZE COMPETITION.

SEVEN gentlemen competed for these prizes, the written portion taking place on May 10th, in London and Edinburgh, and the practical and oral in London on June 8th. The result was that Mr. J. Clarkson (New Veterinary College) gained the first prize of £50, Mr. Hazleton (same college) the second prize of £30, and Mr. Hall (Royal Veterinary College) the third prize of £20.

The examiners were E. T. Cheesman and W. Wood; the Honorary Secretary was A. W. Hill.

## Proceedings of Veterinary Medical Societies, &c.

### ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL HELD JUNE 14TH, 1887.

MR. HENRY L. SIMPSON, President, in the chair.

*Present*.—Professors Brown, Duguid, Pritchard, Robertson, Williams; Messrs. Briggs, Barford, Cox, Dray; Sir Frederick Fitzwygram; Messrs. Mulvey, Jas. F. Simpson, Taylor, Wragg, and the Secretary

The SECRETARY read the notice convening the meeting.

The minutes of the previous meeting were taken as read and confirmed.

The SECRETARY stated that he had received letters from Professors Walley and McCall, and Messrs. Perrins, Santy, Whittle, Woods, Simcocks, Carter, and Campbell, regretting their inability to attend the meeting.

### *Correspondence.*

Letter read from Professor Brown acknowledging the honour of his election as Vice-President.

Letter read from the North of England Veterinary Association, enclosing the following resolutions adopted at its meeting in Newcastle-on-Tyne on the 27th of May:

1. That the number of Examiners should be increased to at least two for each subject.
2. That as far as possible each Examiner should be a specialist in the subject on which he examines.
3. That the Examinations should be both written and oral.



4. That in no case should one Examiner examine on two different subjects.
5. That in the event of a member of Council being appointed an Examiner he should resign his seat at the Council.
6. That the Examiners be paid a fixed salary irrespective of the number of students examined.

The letter was referred to the Examination Committee.

Letter read from the Border Counties Veterinary Medical Society enclosing the following resolution passed at a meeting of that Society:—"That at the Final or C Examination the candidate be examined orally first; that if he pass the oral Examination he be allowed to present himself for the practical portion of the Examination during the same sitting of the Board. If he fail to pass the practical portion he be relegated to his studies either at college or with a member of the profession for such time as the Examiners may deem necessary, and allowed to present himself for the practical part only at the end of such period."

The letter was referred to the Examination Committee.

Letter read from the Liverpool Veterinary Medical Association, enclosing the following resolution passed at its last quarterly meeting:—"That this Association supports the Council of the Royal College of Veterinary Surgeons in its determination of appointing an independent conjoint committee; that is to say, the Council to appoint a certain number of gentlemen, who are neither teachers, Examiners, nor members of Council, to act with a certain number of gentlemen appointed by the Corporation of Edinburgh, in making a thorough investigation as to the cause of the recent riots in Edinburgh."

Letter read from the Privy Council endorsing the opinion of the Council of the Royal College, that the application of Mr. Philip Llewellyn be dismissed and that his name be not registered.

Letter read from Mr. Simcocks containing the following notice of motion: "That after the 1st of January, 1888, a written examination shall be added to the *vivâ voce* and practical at the Final Examination for the diploma of the Royal College of Veterinary Surgeons."

Letter read from Mr. George Goodacre calling the attention of the Council to the case of a man named Cooper who was illegally using the title of V.S., and also enclosing a card from Belton which was being put over the country by a man named Fowler, who was not more than twenty-two or twenty-three, and was not supported by any V.S. as their castrator.

On the motion of Mr. J. F. SIMPSON, seconded by Professor PRITCHARD, it was resolved that the Solicitor of the College be instructed to take immediate proceedings against Mr. Cooper.

On the motion of Professor WILLIAMS, seconded by Mr. MULVEY, it was decided that the opinion of the Solicitor should be taken as to whether the term used by Mr. Fowler on his placard was an infringement of the Veterinary Surgeons Act, and whether he would advise proceedings to be taken.

Letter read from Mr. H. LEENEY calling attention to the fact that John Strand had falsely stated himself to be a member of the College of Veterinary Surgeons in a court of law, and enclosing newspaper cuttings in corroboration.

The SECRETARY was directed to write to Mr. Strand informing him that if he used any title likely to mislead the public immediate proceedings would be taken against him.

The SECRETARY was directed to write to Mr. Rogers with reference to his name being used in conjunction with that of a person who is neither a member of the College nor registered.

*Report from the Court of Examiners.*

The SECRETARY read the report showing the number who had passed and the number rejected and relegated to their studies.

The SECRETARY read a letter from Professor McCall asking whether the second year's rejected students were to be relegated or allowed to go up in July.

Mr. J. F. SIMPSON moved that the recommendation of the Court of Examiners be acted upon.

Mr. BARFORD seconded the motion.

Professor WILLIAMS called attention to certain marks obtained by various candidates who had been relegated. He might mention the name of one student who received three "indifferents" in the second B Examination, and was relegated for nine months. Another, who had received two "indifferents" and a "sufficient," had been relegated for nine months, whilst another student who had exactly the same number of marks had only been relegated for three months. He considered that a very hard thing for the second student, who, in his (the Professor's) opinion, was a far better student than he who had passed. Had he been in a position to make a motion he should certainly have proposed that the recommendation of the Board of Examiners should not be entertained.

Mr. J. ROALFE COX said that if a man failed to be "sufficient," he became "indifferent," but at the same time might be less "indifferent" than another man who was classed in the same category. If the marks had been assessed by numbers instead of words there might be some explanation why both these men were classed "indifferent." It might have been "2" or "8." Unfortunately, the word "indifferent" was very incomprehensive. That might, perhaps, be an explanation why the two men, though apparently receiving the same marks, had been relegated for different periods.

Professor ROBERTSON advocated the principle of using numbers in assessing the competency or incompetency of students. Part of the time when he was on the Examining Board they used to assess by numbers, the highest being 24. Although a teacher, he said he did not see why he should not move, considering the representation made by Professor Williams, that the student relegated for nine months be allowed to go up for his examination at the next meeting of the Court of Examiners.

Mr. MULVEY seconded the proposal.

Sir FREDERICK FITZWYGRAM said that if the proposal were adopted it would be needful to make similar concessions to Professors Walley and McCall. It would be taking a rather one-sided view to allow a student to go up again simply because his principal was present. He thought the justice of the case would be met if they allowed, on that particular occasion, a certain amount of latitude to the principals of all the schools, instead of the only one who happened to be present.

Mr. J. F. SIMPSON thought that the Council ought not to upset the recommendation of the Examination Committee without consulting it; it was only fair courtesy that they should do so. The marks certainly appeared to be inconsistent; at the same time, having heard Mr. Cox's explanation, he could quite conceive it to be reasonable that some men were just "indifferent," while others were badly "indifferent." He thought, however, that the Council ought not to admit those students to re-examination earlier than the Examination Committee had recommended without some conference with that Committee.

Professor ROBERTSON having agreed to withdraw his proposal, the Report from the Court of Examiners was adopted.

*Report from the Court of Examiners for the Fellowship Degree.*

The SECRETARY read the following report:—On the 16th of April the following gentlemen presented themselves for examination for the Fellowship degree, and successfully passed:—Messrs. C. Rutherford, A.V.D.; Kay Lees,



A.V.D.; Alex. Grey, Leith; James Clarke, Cupar Angus; W.D. Hunter, Dundee; And. Robb, Glasgow; And. Boyd, Melrose; and John Hunter, Kelso.

On the motion of Mr. DRAY, seconded by Mr. MULVEY, it was resolved that the next examination for the Fellowship degree should be held in July.

The report was adopted.

*Report from the Examination Committee.*

The SECRETARY read the report, which recommended that a Court of Inquiry be appointed consisting of the representatives of the Dick Veterinary College and the Council of the Royal College. The committee further suggested that no member of the Court of Examiners or persons connected with either of the schools be appointed to act on the inquiry.

The report was adopted.

*Report of the Committee appointed to draw up and sign a Loyal and Dutiful Address to the Queen.*

The SECRETARY read the address.

*Appointment of Committees for the Year.*

The following committees were appointed:

*Bye-Laws Committee.*—Professors Axe, Pritchard, Robertson, Williams, McCall, Duguid, Walley; Sir Frederick Fitzwygram; Dr. Fleming; Messrs. Cartledge, Cox, Greaves, Harpley, J. F. Simpson, Wragg, Whittle, and Barford.

*Dinner Committee.*—Messrs. J. F. Simpson, Pritchard, Wragg, Mulvey, and Briggs.

*Examination Committee.*—

Professor PRITCHARD moved that the whole of the Council should serve on the Committee.

Professor BROWN proposed as an amendment that all the members of the Examining Board on the existing list should have their names erased.

Sir FREDERICK FITZWYGRAM seconded the amendment. He thought the Council would be placing the members of the Examination Committee on a wrong footing, because they would be acting as judges on themselves. The members of the Examining Board were very good witnesses as experts, but their proper place was certainly not on the Committee.

Mr. J. F. SIMPSON said that if the Examiners in Class C, who would be members of the Examination Committee, were taken off the list of the Committee, in fairness the principals of the schools ought also to be taken off. For his own part, however, he hoped that neither would be removed.

Professor ROBERTSON said he did not anticipate any disagreement on the Examination Committee, and as a teacher he should have no hesitation in being a member of the Committee.

Mr. BRIGGS seconded Professor Pritchard's motion, that the Committee should consist of the whole Council. It was the most important year, he said, in connection with the examinations that had ever occurred, and he thought that every member of the Council should serve.

Professor BROWN's amendment was then put to the meeting, and negatived.

Professor PRITCHARD's motion was then put and agreed to—the Examination Committee to consist of the whole Council.

*Finance Committee.*—Professors Williams and McCall; Messrs. Dray, Greaves, Harpley, Wragg, J. R. Cox, Mulvey, Cartledge, Santy, J. F. Simpson, Simcocks, and Barford.

*House and Building Committee.*—Professors Pritchard, Robertson; Messrs. Greaves, Harpley, H. L. Simpson, Wragg, Whittle; Dr. Fleming; Mr. Dray; General Sir Frederick Fitzwygram; Messrs. Barford, J. F. Simpson, and Briggs.

*Library Committee.*—Professors Axe, Pritchard, Robertson; Dr. Fleming; Messrs. Harpley and Mulvey.

*Museum Committee.*—Professors Axe, Pritchard, Duguid; Messrs. J. R. Cox, Dray, Wragg, J. F. Simpson, and Mulvey.

*Parliamentary Committee.*—Professors Brown, Robertson, Pritchard, Dray, Duguid; General Sir Frederick Fitzwygram; Dr. Fleming; Messrs. Cartledge, Greaves, Harpley, Simcocks, H. L. Simpson, J. F. Simpson, Barford, and Whittle.

*Registration Committee.*—Professors Pritchard, Robertson; Dr. Fleming; Messrs. Dray, Greaves, Wragg, Whittle, J. F. Simpson, Mulvey, J. R. Cox, and Briggs.

#### SECOND SPECIAL MEETING.

The PRESIDENT said that Professor Walley's notice of motion had been withdrawn. With regard to discussing the new and amended bye-laws of the College, as a new committee had been appointed, he did not think it desirable to enter upon the discussion immediately. The Committee could meet at an early date and report to the next quarterly meeting of the Council.

Mr. WRAGG said that, in the absence of Mr. Santy, he would ask the permission of the Council to allow the Norfolk and Eastern Counties, the Western Counties, and the Lincolnshire Veterinary Medical Societies to place a companion window on the right-hand side of the Council Chamber. He had pleasure in placing on the table a design, namely, a student presenting himself before the Board of Examiners to receive his diploma.

On the motion of Mr. DRAY, seconded by Mr. J. R. Cox, it was resolved that the Council express its great obligation to the Norfolk and Eastern and Lincolnshire Veterinary Medical Association for its kind offer, at the same time asking that fuller details of the design might be submitted to the next quarterly meeting.

Mr. J. F. SIMPSON asked that the Secretary might be instructed to have a list of the committees printed and sent to the members of the Council.

Mr. DRAY asked whether any measures would be taken to illuminate the College on Jubilee day. It would be an unfortunate thing if the beautiful windows received any damage, and he hoped the precaution would be taken of placing a light in the windows.

Mr. J. R. Cox moved that a wire netting be placed on the outside of the stained-glass windows by way of protection for the future.

Mr. DRAY seconded the motion, which was agreed to, and the Secretary to obtain estimate for same.

On the motion of Mr. BARFORD, seconded by Professor WILLIAMS, it was resolved that a sum not exceeding £10 be expended for the purpose of decorating the front of the College building on the day of the Jubilee.

It was decided that the next quarterly meeting should be held on the 28th of July.

The usual vote of thanks to the President for conducting the business of the meeting terminated the proceedings.

#### SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION. (Continued from p. 61.)

##### *The Examiners in Edinburgh.*

The CHAIRMAN said he had been induced to bring this subject before them, at a suggestion from the Royal Counties Veterinary Medical Association. He



did not know that he need go into the details of the matter, painful as it was, because he believed many gentlemen were already somewhat acquainted with the history of it. It was briefly this, that at the last December examination in Edinburgh a certain number of Scotch students, who, he presumed, felt aggrieved at some little matter—he did not quite know what—took upon themselves to insult the Examiners. He believed it applied to nearly all of the Examiners, if not quite, and the students not only insulted them by their language, but actually hooted them in the public street, pelted them, and indulged in other very disgraceful proceedings towards them. As respectable members of a respectable profession, when they elected gentlemen to the high and distinguished position of Examiners—a position which was very onerous, very anxious, and the duties of which should be carried out, as he firmly believed they were, in their entirety and integrity—he thought they should, as individual members of the profession, do everything they could to uphold those gentlemen, and to prevent them from receiving such insults in the future. (Hear, hear.) The following resolution had been forwarded to them to bring before this meeting, and he did not know that they could put it in any better form:—"I am desired by the members of this Association, at our annual meeting to-day, to express to the Council of the R.C.V.S. our indignation at the scandalous treatment to which their Examiners were recently exposed in Edinburgh by the dissatisfied students, and also our sympathy and continued confidence in those Examiners." The Chairman went on to say that if these students had a grievance, and he would not say they had not a grievance—probably they had—all honourable and respectable members of society would agree that this was not the proper way to get redress. (Hear, hear.) If they had a grievance, the proper way would have been to have drawn out a statement of that grievance, witnessed by the signatures of the whole of the students, if they could get them, and to have sent it as a memorial to the Council of the Royal College. In that case he was quite satisfied that, like every other document which came before them, it would be calmly and fairly discussed, and, if there was found to be a grievance, it would be redressed. The course which had been taken by these students he considered to be a most outrageous proceeding. When gentlemen who aspired to enter an honourable profession such as theirs conducted themselves in such a manner, he thought they could not in too forcible language show that they would endeavour to repress anything of the kind in future.

Mr. MARTIN seconded the motion that the resolution which the Chairman had read should be adopted by the meeting, and said he should like to see the matter properly discussed. He thought every member of the profession should give his opinion upon this disgraceful conduct of the Scotch students. He believed the Examiners carried out their important duties conscientiously. It was necessary that they should not allow a young man to go forth upon the country who was unfit to practise, because it tended to damage the reputation of the veterinary surgeons as a body. If they refused to go to Scotland, the Scotch pupils would have to come here. He thought the professor at a college, whatever it was, ought to have a sufficient control over the students to prevent them from taking such strong proceedings. (Hear, hear.) He supposed they considered that they had been unnecessarily or unjustly rejected, but it was necessary that they should be educated up to the standard of the examination. (Hear, hear.) It was a proverbial saying, "If you cannot pass the London examination, go to Edinburgh; you can get through there easy enough." He supposed they had been of late more rigid and searching in their examinations, and consequently the students found it was not so easy to pass. He had no doubt the professor of the college—he did not know who he was—felt aggrieved that the reputation of his college

should suffer in consequence of so many rejections. In that case, it was for him to educate the students up to the standard of the examination. He thought they all ought to give their opinions individually, and each association as a body, as to the necessity that they should afford the Examiners every protection, so that they might not be subjected to this insult on any future occasion. (Hear, hear.) He begged, therefore, to second the proposition of the President.

Mr. RAYMOND said, as there were two or three members of the Council present, he would like to read something from the VETERINARY JOURNAL, just out. It was in reference to a correspondence going on between Dr. Fleming, or rather, the Editor of the VETERINARY JOURNAL, and Professor Walley:—"You state that no reference by way of complaint" (referring to an editorial in connection with the examinations) "has ever been made at the Council Board. I must ask you, sir, to reperuse the reports of the proceedings of the Council meetings during the last few years, and see whether the statement is in accordance with either implied or actual fact." That was so much as to say that the statement of Dr. Fleming was not true, that there had been no complaints at the Council. Now there were members of the Council present who had been on the Board for some years, and it would greatly support the motion that was before the Council if they could deny, or otherwise, the statement of Mr. Walley. (Hear, hear.) He thought it ought to be checked at once, if possible, if it was a mis-statement.

Mr. MARTIN: You say it has been discussed?

The CHAIRMAN: We have had one meeting, and there is another to-morrow.

Mr. RAYMOND: This is referring to some time back.

The CHAIRMAN: I have only been on the Council Board since the last election. Certainly since I have been there, I have no knowledge of any formal complaints coming before us from any Scotch Schools—or any implied complaints. Mr. Wragg, no doubt, will corroborate me, or state his opinion.

Mr. WRAGG thought the writer of the passage quoted was perhaps referring to what took place during his presidency. A motion was brought forward then to elect more Examiners. There had been no complaints made then as to the mode of examination, nor any complaints made against any of the Examiners.

The CHAIRMAN: I recollect he did bring forward a proposition once that the Examining Board should be increased in numbers, but I think in no way whatever on that occasion did he imply any neglect, or make any statement as to his being dissatisfied with the mode of examination.

Mr. WRAGG: Until this last Board was elected it was usual to elect two Boards, one for Scotland and one for England. For myself I think it a great mistake. (Hear, hear.) I think all the students should be examined by the same Board. Since the election of this last year, this dissatisfaction has arisen.

Mr. HOLLINGHAM: Since then the shoe has begun to pinch.

The CHAIRMAN: That appears to be the case.

Mr. EDGAR also expressed his sense of disgust at the treatment which the Examiners received, and said that they ought, as a body, to support them as much as they possibly could. The examinations of the R.C.V.S. were by no means too severe. He should be in favour of making them far more severe than they were at present, and increasing the curriculum. If the members of the Board were a representative body, as they undoubtedly were, and one in which the profession had confidence, they would be wanting in respect to them if they did not support them in their present position. He did not quite see, however, how they could take measures to protect them in future. It appeared to him that if the Scotch students were of such rowdy natures that



the presence of a policeman walking by their side was necessary in order to keep them respectable, the less of them that were admitted into the profession the better. (Hear, hear.)

Mr. HOLLINGHAM said he should be inclined to recommend that, in order to avoid punishing the innocent with the guilty, they should ask the Council to consider the advisability of compelling these particular students who rendered themselves so obnoxious, and behaved in such a disgraceful manner, to come to London for their final examination—at any rate, until by better conduct they had given security for their future behaviour. He thought that would be better than seeing the Examiners under the care of a patrol.

The CHAIRMAN was afraid that under the present arrangement they could not do that.

Mr. MARTIN: If the Examiners would not go, they would have to come.

Mr. HOLLINGHAM suggested that they might draw attention to the suggestion. He sympathised, of course, very heartily with the resolution.

Mr. WRAGG said the committee were sitting on this question for some hours. They took all the evidence they had before them, and had drawn up a report embodying what they thought would be the means of affording better protection to the Examiners. He hoped when they saw that report in print, if it was adopted, as he trusted it would be, they would find that the Council had taken adequate means to protect their own officers. He was sure every member of the Council felt pleased to think, with one or two exceptions, that they had had such an excellent Board of Examiners, and they could be quite sure that the majority of them did all in their power to uphold their officers.

Mr. MARTIN observed that this conduct on the part of the students looked like an act of intimidation, or a threat, to make the Examiners pass them. He supposed they were adopting Irish principles. (Laughter.)

The CHAIRMAN said he had been going to make one or two remarks on the subject, but, after hearing what Mr. Wragg had said, he would rather not, because, the committee having sat, would have a far better opportunity of dealing with the case, upon the evidence before them.

The matter then dropped, the Secretary forwarding the resolution to the Council at the close of the meeting.

#### *The Greaves Testimonial.*

The CHAIRMAN read a letter, stating that it was thought desirable to close the Greaves Testimonial at an early date, and as there were perhaps some members of the Association willing to recognise the valuable services Mr. Greaves had rendered the profession for a great number of years, it would be esteemed a favour if he would cause this letter to be read before the members at their next meeting, and kindly invite and receive subscriptions, to be forwarded to the Treasurer. The Council had decided that the testimonial portrait should be hung in the Council-chamber of the College.

#### *Paper by Professor Duguid.*

Professor DUGUID then read a paper on the history and prospects of the profession.

The CHAIRMAN, at the close of the paper, invited discussion.

Mr. MARTIN took up the subject, remarking that, as the paper was to a great extent the history of the profession, it did not present a very great field for discussion, and he thought what they had to do was to congratulate themselves upon having, in the Privy Council Office, such men as Professor Duguid and Professor Browne, who did their very utmost to raise the reputation of the profession, and to bring it prominently before the public. Although they chaffed their friend, Professor Browne, a bit sometimes—(laughter)—he thought that both he and Professor Duguid were entitled to

their best thanks for the interest they took in the veterinary profession. Another public man who also deserved their thanks was Dr. Fleming. (Hear, hear.) When he heard the statistics as to the increase in the number of veterinary surgeons, and the increased remuneration, and the increased number of appointments in the British army, he thought it was entirely due to Dr. Fleming. While they had at the head of the departments men of this character, who had so much influence with the Government, they might feel sure that the interests of the profession would remain perfectly safe in their hands. He attached great importance to the question that had been so fully discussed—the pupilage question, and no doubt his friend, Mr. Edgar, with his usual eloquence, would have something to say upon this subject. As Professor Duguid had pointed out, the great want of the men who at present passed the colleges was practical knowledge. He heard of a farmer the other day, who said he could not stand one of them—he put the “side” on so. (Laughter.) There was no doubt that they had improved very much as regards theory, but they lacked the practical knowledge that would be calculated to extend their reputation, and to assist them in obtaining a living. Then, as Professor Duguid said, they had to consider the question: Will it pay? They must consider in the first place that all successful men in the veterinary profession would be successful at anything. (Hear, hear.) It required men of energy, men of very industrious habits, and men of respectability, who would be calculated to gain the respect of those with whom they were brought into contact. It was said there was no such thing as friendship in business, but he maintained that there was. (Hear, hear.) Men who carried out the duties of their profession respectably and acted honourably, as gentlemen, would succeed in anything. He was very fond of the profession. Socially, they were now looked upon much better than their forefathers were. They made a great many friends, and, in fact, stood in a better social position than ever they did. The question of remuneration had also been raised, and on this point he would say that, if he had to employ his energies in starting business over again, he did not think he should start in the veterinary profession. With regard to the qualifications required, he thought a man, to make a proper veterinary surgeon, needed, so to speak, to be brought up in a manger. (Hear, hear.) It was needful that he should know all the habits and characteristics of horses, and be brought up in the midst of them almost from his cradle. (Hear, hear.) He did not know what to say about his London friends—of course they were very wealthy men—(laughter)—but speaking of veterinary surgeons in the provinces, they could not employ a great number of assistants, but had to earn every half-crown themselves; and no doubt the one reason why they had so few at their meetings was that a man was afraid to leave his practice, for fear of losing something, or neglecting his duty. Perhaps some one else might be mean enough to secure his client if he happened to be away; and, it might be, not for that once, but for ever. He did not think the profession would be found very lucrative, if a man wanted to make a fortune. (Hear, hear.) Where there was a lot of business, and they could employ a lot of men under them, they could get a living. It was a harassing life; the veterinary practitioner was every one’s servant, day or night, and could scarcely ever get a minute’s peace if he had anything like a large practice. (Hear, hear.) He thought that, considering the time, energy, and industry, that had to be devoted to the study of the profession, the remuneration was not equal to the outlay, and the amount of knowledge that had to be acquired. (Hear, hear.)

Mr. EDGAR, who had to leave the meeting early, next spoke, and said their thanks were due to Professor Duguid for opening up an opportunity of discussing the social position and progress of the veterinary profession. They



did not often have, even at the Congress meetings, an opportunity of looking these things over. A great deal of the paper was certainly a matter of history; and the past, to a certain extent, they had done with, except so far as concerned looking at it with regard to encouragement for the future. They had been invited to look at the question of education. Professor Duguid said, from his experience, an educated young man of to-day, owing to practical defects in his education, was not likely to make the same successful man as the student who was his *confrère* twenty years ago. Was Professor Duguid placing that man with twenty years' experience on the footing of the young man who had just started out of school? If so, the comparison was perfectly unfair.

Professor DUGUID explained that this was not his meaning.

Mr, EDGAR, continuing, said the question of education was one which they must face fairly and candidly. The School Board education of to-day was on about the same footing as the middle-class education of twenty years ago, and they must expect their profession to advance in proportion to all others. With regard to the advantages of adopting their profession as a means of livelihood, he, for one, would not turn back. If he had the opportunity of going over the past ten years again, and choosing any other profession, he would, with one exception, choose his own again. He did not regret that he went into the profession at all. He thought it afforded a good opportunity for a man to make a fair return for his capital, and they must bear in mind that money-making was not everything. It did not give them all the enjoyment in life. He did not speak as a rich man, for he was a poor man, and he only had what he earned; but in his opinion there was a great deal of enjoyment to be got out of life in veterinary practice, although there was not a very large fortune to be made out of it. As had been said, their position depended entirely upon themselves. The profession was just what they made it. A man could make himself a respectable gentleman's position, as a veterinary surgeon, or he could make himself a cad, despised by everyone. Then there was the question of turning out the young men. This was a sore point, he knew. They had discussed it over and over again at different gatherings, and he was glad the present opportunity had cropped up. He was interested in the remarks that fell from men of Professor Duguid's experience in examinations and practical subjects, because they rubbed up against so many men in the course of their duties as inspectors throughout the country, and were in a position to compare their merits. Was it the fault of the young men themselves that they were turned out of college, after two and a-half years' education, most incompetent to undertake the duties of a man of experience? Why was it that there were these defects in the education? They heard that the pupilage clauses had been rejected, much to the disadvantage, in his opinion, of those who were entering upon the profession as a means of livelihood. He had four years' pupilage, he was thankful to say, and he had never regretted to that day that he had them. He thought they had to look at the question from two points of view. They saw the schools entirely prejudiced against pupilage. It was rather remarkable, but all the teachers in the schools were prejudiced against pupilage. Why? All the practitioners were in favour of pupilage, almost to a man. Why? They could not face the question in any other way than by admitting that it was a financial question. He contended that their schools were placed in an unfair position. It was in the interests—he regretted to say it—of the professors of the schools to force as many students through the schools as they could in a given time. That was altogether a wrong system. It did not matter to those professors, to a certain extent—and he spoke with all respect to them—how far these men were successes or failures in after life. They had paid their fees at college, and done their part towards keeping up the institution which ought

to be kept up in another way. It ought to be kept up by Government. All the while the veterinary college was dependent on students' fees so much as at present, so long would they have the desire to "force" men for the profession and rush them upon the country, whether they were fit for their duties or not. What was the remedy? Pupilage was one very good remedy, and there was another one which he had never seen fairly discussed yet—*i.e.*, the amalgamation of very large dairy farms with the teaching schools. He considered that if pupilage was not brought to bear in the course of a few years, the Veterinary College in London, and every large teaching school, ought to have a large dairy farm—and they could be made a commercial success—say with 300 or 400 head of stock, and 200, 300, or 400 sheep and pigs, and thus give every student the fullest opportunity of cultivating a knowledge of these animals in life. By living among them, they would obtain that insight which was requisite into their habits and characteristics. All the while they advocated pupilage, they were told, "You want to get pupils." Admitting this, however, there was the other remedy. It was a certain fact that men were turned out of the schools to-day, in spite of all their advantages, with a perfect want of practical knowledge. (Hear, hear.) In one instance which came under his experience, a man who passed a splendid scientific examination, and came out at the top, was given a blind horse to examine, and, would they believe it? he passed a blind animal as sound. After being twice asked to go back and look at those eyes to see if they were sound, he still said the eyes were sound. (Laughter.) If a man like that was to be considered fit to go out and practise, and receive a guinea fee for examining horses as to soundness, it could not be presumed that he would be respected by his clients.

Mr. HOLLINGHAM: What was the disease?

Mr. EDGAR: Cataract. Proceeding, the speaker said, one subject he should have liked to have heard touched on was the literature of the profession. He always took it that the literature of a profession was a very good gauge of its social standing, and of its position generally. He really thought their literature of to-day was not a credit to them. He thought they were not represented, in regard to literature, as they should be. They had—with all honour to Dr. Fleming and the Professors at the College—only those two squalid little journals, coming out once a month, representing the interests of their important and influential profession. If he was spared to live until the Veterinary Congress at Peterborough, he intended to bring forward a resolution, stating that the time had arrived when the profession should be represented by a weekly periodical of some kind. As he had said, they had now two journals placed before them. He had been a contributor to them for many years, and did not like to give them up, and he respected those who were connected with them. But month after month they saw articles written by the same men in the same papers, published twice over, of no practical value at all. On the other hand, there were discussions of societies like their own, which were of immense value to practical men, and where they got the opinions of ten or fifteen practical men on a subject like that of Spavin. But what did they find? When they wanted those reports published, they would find them in the journals that day six months, or in nine months' time, when they had forgotten all about the meeting. They would find the proceedings of the National Veterinary Association running over a series of months before they reached them. It was a discredit to them altogether. They ought to have a literature representative of the profession of to-day. Surely there were a hundred men who would put down their names in a list as willing contributors to a journal, in order that they might be better represented in this respect.

Mr. WRAGG, after alluding to their indebtedness to Professor Duguid for



his paper, said it seemed to be one of the burning questions of the day, as to whether there should be a pupilage clause in the late charter. He felt convinced that something would have to be done to ensure that the pupils were better instructed, from a practical point of view. He and others, who were in the habit of employing assistants, found that although the pupils were able to satisfy the Examiners, when they came to them, they had to pay them a salary, and instruct them as well in the practical part of the profession. (Hear, hear.) He contended that this ought not to be. There certainly ought to be some provision to ensure that the pupils should receive a practical education. Mr. Edgar had remarked that they were told they wanted to get pupils, and that was the reason they proposed that this clause should be inserted, but he did not think there was any foundation for this. Personally speaking, he did not care about taking pupils. He had often been asked to take pupils, and always refused. He preferred to have a qualified assistant, but it was a very hard thing when he got his qualified assistant to have to pay him a good salary, and to have to teach him his profession. (Hear, hear.) The pecuniary part of the subject he approached with a great deal of diffidence. The profession was certainly one in which no man he knew, if he stuck to his legitimate calling, would make a fortune. (Hear, hear.) The fact was that their profession was not alone in this respect. Throughout all the professions, it was a very difficult thing for a man to amass a large fortune, unless he happened to be a Sir William Gull, or a Dr. Jenner, or in other words, one of those men who were specialists. Certainly the ordinary surgeon, the ordinary architect, and the ordinary lawyer, were men who, out of their profession, pure and simple, could not make a large fortune. He was very pleased indeed to hear from Professor Duguid that there were so many veterinary surgeons now employed as veterinary inspectors. He thought it was a great advance in the progress of the profession, that in so short a time so great a proportion of these inspectors should be qualified men. He must say that he thought their best thanks were due to the Veterinary Department of the Privy Council in this respect (hear, hear); and he himself publicly tendered his thanks to that department, of which their friend, Professor Duguid, was so able an officer, for their kindness in bringing about this state of things. (Applause.)

Mr. RAYMOND said Mr. Edgar had complained of the scanty records published in the journals. He had often heard that complaint made, but he had always heard it answered by the statement that it was the fault of the secretaries, in not sending in more material, and that everything sent in was published. Then with regard to the National Veterinary Association, and the non-publication of their records until after such a long interval, he thought the reason was, that this was done in the interests of the National Veterinary Association itself. It was felt that if all the papers were published at once, many people who did not belong to the National Veterinary Association, but who subscribed to the journals, would have the benefit of the records of the Association without paying their 10s. The records were sent round to all the members, who had them long before they were published in the journals. As regards the question of practical knowledge, of course practical knowledge meant experience, and unless people had gone through a course of experience they would not have much practical knowledge. They were accustomed to growl a good deal in their profession about that sort of thing, but in reality he did not think they were much worse off than the sister profession. Only the day before, he heard of a case bearing upon this point. A doctor was out shooting in Canada, and met with some accident, in which he blew part of his hand off. He was a regimental surgeon, and his assistant surgeon was sent for with a view to removing the rest of the hand. He refused to do it, admitting his inability

to perform the operation. They had to send some twenty or thirty miles away into the backwoods, to find a chemist who had had a certain amount of experience in the accidents which commonly occurred to backwoodsmen, who came and very boldly performed the operation, while the assistant surgeon looked on, so that, although of course it was quite right to agitate as much as possible for practical knowledge, he did not think they were alone in the matter, by any means. As Mr. Edgar justly said, it was not alone a question of money-making that had to be considered in regard to their profession. Those who really stuck to the profession perhaps made very little money. But let them look at the pleasures they had! (Hear, hear.) Who would be a quill-driver? Fancy quill-driving in a back office in London, with a chance of being Lord Mayor! (laughter.) Had they never thought of the pleasure of riding or driving through the country? (A Voice: On a wet morning.—Another Voice: In the night too.—Laughter.) Yes, even in the night, if it was a fine moonlight one—it didn't do to be in a fog. (Laughter.) He had been told by fellow officers: "Well really I envy you, Raymond. You have very little to do really. (Laughter.) You haven't got to get up early in the morning, you haven't got to do parades; all you have to do is to look to your horse, and look beautiful if you can." (Laughter.) This aspect of the case should not be lost sight of.

Mr. MARTIN: I like the profession better than any other, but it is not a money-making profession.

Mr. HOLLINGHAM gathered, from what Mr. Edgar said, that he did not refer to the reports in the VETERINARY JOURNAL and the other journal as meagre but, to the fact of their being spread over such a long time, so that they forgot the beginning when they got to the end, or that, when they arrived at the discussion, the meeting had taken place such a long time previously that the impression upon their minds was much less vivid than if they could have the report appearing in a weekly journal. So far as he was personally concerned, he had always sent to the journals the record of the discussion which he obtained from the reporter, and he generally obtained from the lecturer his actual paper, so that there was abundant material for a report of their proceedings.

Mr. RAYMOND said that his remarks were of course subject to the rule—"present company always excepted." (Laughter.) Referring to what Mr. Edgar had said, he did not think it mattered much whether the remarks on such a subject as Spavin were published a few months after they were uttered, or not.

Mr. MARTIN, with reference to Mr. Edgar's remarks respecting pupillage, did not think they had such contracted opinions about taking pupils as those which he had quoted. He had no pupil now, and had refused one or two. They felt the importance of practical knowledge, from the want of which the profession was brought into ridicule, and were not actuated by the mercenary idea of wanting to take pupils.

Professor DUGUID explained what he meant in reference to the question of education—that the men who were his fellow pupils knew the habits of animals, and had a practical knowledge before going to college, that stood them in good stead, and enabled them to be successful men in a short time, while it would perhaps take ten or twelve years' experience for the men now leaving their colleges to obtain the same practical knowledge. It was not many months ago that he heard one of their teachers say that he had now to deal with pupils whom it would take six months to teach how to go into a stable, go up to a horse, and put a halter on. (Hear, hear, and laughter.)

The CHAIRMAN said he could not let such an interesting subject go by without adding his testimony to what had already been said. He was the individual who pressed his friend, Professor Duguid, into the service of



coming there that day, and he should like personally to thank him for the trouble he had taken. Speaking of the progress of their profession, there could not be the shadow of a doubt that during its early history, some half a century ago or more, it had a very uphill battle to fight. They must bear in mind that on the continent nearly every institution of a veterinary character was backed up by the support of the Government, but in this country, as they were all aware, they very much set their faces against anything like State aid. We in this country were fonder of depending on our own resources, and trying if we could not, by dint of perseverance, energy, and enterprise, forward our own interests by establishing different professions, like the veterinary medical profession, almost entirely unaided by the State, and therefore we were not quite on an equal footing with other countries. From this very reason he thought that if they did succeed and advance with the times, and made the progress which they hoped to do, there would be more credit attached to them, as a body, than, to a great extent, to their friends on the continent. The first great boon which this profession received, without doubt, was its original charter in 1844. The Professor had described very graphically the advantages which that original charter gave to the profession, and they were, no doubt, of a very limited character. He, of course, could date his pupilage back to only two or three years after that charter was obtained, having been a pupil in 1846-7-8; and although he was too young then to enter much into the details of the advantages conferred by the charter upon the profession, still he could recollect in a very marked degree the many differences there were in regard to the state of pupilage, the condition of the college, the standard of the teaching, and the class of pupils whom he then met. There was not the shadow of a doubt that the point referred to in the last part of the discussion that had just taken place—viz., the comparative merits, from a practical point of view, of the students of the present day as compared with those of some twenty or thirty years ago—was one which stood out in bold relief. He could very well recollect that, as Professor Duguid said, the students of that time probably did not receive the scientific education which was given to the students of the present day. But with regard to their future career after they had left the college, and, armed with the diploma which they took from that college, went into different parts of the country to practise, he could bear testimony, by reference to a great many personal friends whom he was happy to make during those years of pupilage, and who had very markedly succeeded in the profession which they then embraced. He felt very strongly on one point that had been discussed, and that was that a very large number of the young men who entered the colleges at the present day, as had been remarked by previous speakers, really did not know the “near” side from the “off,” they did not know on which side to go up to a horse, and didn’t know how to put the halter on, or anything of the kind. They were not familiar with a single habit of the horse during health, and he ventured to think that if there was one thing more than another that assisted a young man in the diagnosis of disease, it was an accurate knowledge of the habits of the animal when in health. (Hear, hear.) He was brought up on a farm from his earliest days, and from the very hour he could walk had been among animals. Being brought up in a very large stock farm in the midland counties, he had been night after night in the lambing yard, and in every department of the farm, and he felt that whatever little practical knowledge he possessed was due to the insight which he thus had when a boy into the natural habits of the different animals by which he was surrounded. In his opinion, a great deal of the success or non-success of the present day depended on this point. There was such a multiplication of callings at the present day that men hardly knew what to turn their atten-

tion to. At any rate, they often chose the veterinary profession as a calling, without, as he had already said, the slightest knowledge of the natural instincts and habits of the animals which they set out to treat. He thought the steady progress of the profession was very marked in many ways. They had, as had been said, the supplemental charter granted ten years ago, and which he thought was decidedly a step in the right direction. They had an increased curriculum at the colleges, and one more session added; they had also a far stricter examination than in past years, and he should like to supplement this by referring to another point—although to some extent he was not privileged to say what he should like to say—and that was the immense advantage the Veterinary Department of the Privy Council had conferred, whatever might be said to the contrary. He had been an officer of that Department for over thirty years, and could bear testimony to the steady advancement which had resulted from the course the Veterinary Department of the Privy Council had taken from time to time, and the better status to which the profession had attained in consequence. He knew full well that even at the present moment a very large power was given to local authorities, to act as they thought proper, and, as had been shown, quite three-fourths of those appointed in past years to be inspectors of different districts were not at all qualified. But the last figures that were read out, relating to the year 1885, afforded a very marked contrast indeed, and showed that a very satisfactory step had been taken in the right direction. Then again, they had only to look at the progress made in the Army Veterinary Department to see a very marked improvement. He was very glad to see his friend, Mr. Raymond, present, and he would bear him out in saying that the position of the army veterinary surgeons had very much improved within the last ten or fifteen years. He would not detain them by dwelling on these points. Altogether, he thought they had had a very practical and a very useful paper brought before them, showing the steady progress which had been made by the profession from the time that St. Bel entered the College at Camden Town some century ago down to the present, and when he again reminded them of the uphill game which the profession had to face for the first forty or fifty years he thought he might say that, taking all in all, they must not altogether regret the position in which they found themselves at the present day. As regards remuneration, he must, to a certain extent, agree that the remuneration of a country veterinary surgeon, if he did not engage in any other calling, was not at present such as they would like to see it. But of every calling the same thing might be said, so keen was competition at the present day. The number of veterinary surgeons was daily increasing in different parts of the country, and the number of those who followed other callings was increasing also, so that he did not know that in this respect they were worse off than other members of the community. It had been said, and, he thought, worthily said, that whatever status their profession was to take rested with themselves. Whether a veterinary surgeon made a standing in any place in which he might find himself depended upon his own conduct, and they might depend upon it that if he persevered in a steady and an upright course, treating his clients with that respect and that courtesy which was due from one to the other, in the course of a few years he would gain the respect of those around him, and his knowledge and qualifications would be duly appreciated. He knew that it was by very slow degrees that a man could make headway, for he had experienced it himself. The town he lived in he went to as a perfect stranger, not knowing a single person, in 1849. He had persisted in a steady course, not forgetting the old adage that a rolling stone gathered no moss, and although he had a very, very uphill game for the first ten or twelve years, during which he steadily persevered, and although he was now very far from a rich man, still he was not dissatisfied with the position



he had been able to take. As he had remarked, the progress made might be slow, but he thought it would be found that a steady course of upright conduct and perseverance in an honourable career would generally end in success. (Hear, hear.) He had incidentally alluded to the subject, but he would now beg to move in a formal way that the very hearty thanks of the Association be given to Professor Duguid for coming down, at considerable inconvenience to himself, and favouring them with the address which they had listened to that afternoon. (Applause.)

Mr. FARRANCE seconded, and the motion was carried unanimously.

Some discussion then took place concerning the next place of meeting, and Croydon, Brighton, Guildford, and Canterbury were in turn suggested. Eventually Mr. WRAGG proposed Redhill, and Mr. HOLLINGHAM seconded, while Mr. MARTIN proposed Dartford, and Mr. FARRANCE seconded. Five members voted for Redhill, and four for Dartford, and Redhill was accordingly selected.

The CHAIRMAN also made a few remarks respecting what had taken place during his year of presidency. He accepted the office with extreme diffidence, this being the first of the kind he had ever filled, although he had occupied many similar offices in connection with local institutions. It had been a source of sincere pleasure and gratification to him to know that his humble services had given satisfaction. He certainly looked upon it as a great compliment that a gentleman like Dr. Fleming should put himself to the inconvenience of coming down to oblige him by attending his first meeting, and he was also very much gratified at the number of gentlemen who responded to his invitation to come and meet him on that occasion. He might mention that they would also have had with them Professor Longmore, chief of the Netley Hospital, if he had not been prevented from coming by a very urgent engagement in London, besides several others from whom he received apologies for non-attendance. Their next meeting was at Tunbridge Wells—not so large probably, but still a very enjoyable one, and again he was very much gratified when Professor Axe responded to his invitation by coming and reading a very interesting paper. Once more he would thank most heartily Professor Duguid, for the interest he had afforded them at this present meeting. As he had previously remarked, the year had been one of great pleasure to him, and if in any way his humble services had tended to forward the interests of this Association in particular, and the profession at large, any little trouble he had taken was amply repaid. (Applause).

Mr. WRAGG said it should be recorded that their best thanks were due to the Secretary for the very able manner in which he had carried out the duties connected with the business of the Association. He might add that he was very glad to see him accept the office again—although he seemed to refuse that first fence. (Laughter.) He was certain that he would continue to render great assistance to them, and no doubt he would have great help in doing so from his friend, Mr. Piessé.

The CHAIRMAN regretted that this matter was overlooked in the first part of the meeting. He asked them to record a hearty vote of thanks to Mr. Hollingham for his valuable services to the Association as Honorary Secretary during the past year.

The motion was carried unanimously.

Mr. HOLLINGHAM thanked them very heartily for their kindness, adding that when one found his efforts recognised in such a kindly manner he felt it a pleasure to continue them. (Applause.)

This terminated the business of the meeting, and the members present subsequently dined together at the same hostelry, a very enjoyable evening being spent.

## LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

*(Continued from p. 55.)*

*Salivary Calculi.*—These concretions, which are of a slightly variable consistency, but made up chiefly of calcium carbonates and phosphates, are found principally in the ducts of the parotid gland.

They appear to owe their formation to particles of foreign matter from the mouth entering the duct and becoming coated with the sediment and salts of the saliva. The earliest indication of their existence may not be the presence of the calculi themselves, but a swelling or distention of the duct behind the concretion, which being examined, leads to the detection of the calculus. When discovered an attempt should be made to pass the offending body or bodies onwards through the duct into the mouth, which when done early enough will sometimes succeed. If not successful in this, removal can only be effected by laying open the duct and removing the concretion; the wound made should not be larger than is absolutely necessary, seeing that its closure may be a troublesome matter.

*Inflammatory induration of the molar glands.*—These somewhat isolated and scattered glands, which occupy a situation imbedded in the muscular tissue of the cheek parallel with the molar arches, are occasionally found swollen and indurated and interfere with mastication. This state may follow some local irritation or it may accompany some general disturbance not well differentiated; where their alteration is sufficient to call for our interference, the local application of iodine ointment is likely to benefit, together with such general treatment as the accompanying disturbance indicates. In a limited number of cases extirpation of the enlargements has been carried out with success.

*Tumours or morbid growths in the mouth. Epulis.*—This is the name which is given to a tumour springing from the alveoli and periosteum covering them. In the horse it is more frequently seen in connection with the alveoli of the incisor than of the molar teeth. Its form is that of a smooth, rounded, or lobulated growth, covered with the common mucous membrane and feeling firm or semi-elastic to the touch. Its intimate structure is variable, some being simple fibrous growths, others sarcomatous. These growths are rather variable as respects their progress, sometimes remaining for long nearly stationary, in other instances rapidly progressive, and becoming inconvenient from their mere bulk.

In the treatment of these, success varies with their intimate nature; the simple form when removed may not return; the malignant, even when the portions of bone to which they are attached are removed with the tumour, are liable to again appear.

*Ranula.*—A cystic growth in the mouth, chiefly arising from distention of the ducts of the sublingual or submaxillary glands. The term is also given to other cystic formations existing beneath the common membrane of the mouth. They are always small at their beginnings and appear to arise from some local irritation, or from inspissation of the natural secretion. They are successfully treated by freely incising the swelling and allowing the fluid to escape.

*Inflammation of, and abscesses in, the alveolar membrane.*—Limited inflammation and abscess of the alveolar membrane and periosteum, sometimes known as gum-boils, are in the horse generally the result of local irritation. They may be observed at any part of the molar alveoli, but are oftener met with between the third and fourth molars of the lower jaw. At this particular spot, from the frequency of a natural interdental space, a facility is given for the insinuation of foreign materials and articles of food between the gums and the teeth, the lodgment of which induces irritation, leading to pus forma-



tion. In other instances the cause of the irritation may be the existence of a diseased tooth. The indications of this state of things are general and local; the latter the diagnostic, of the former the chief are loss of flesh and inappetence; the more characteristic of the latter are difficulty in mastication, ptyalism, local pain, and swelling detected on manipulatory examination.

In the management of these cases, which are more common and more tedious than is generally believed, attention will need to be directed to the general disturbance where such exists. The local treatment, that with which we are now concerned, is comprised in keeping the mouth as clean and wholesome as possible through gargling with tepid water or such mild disinfectants as solution of permanganate of potash or common salt, while any offending body which has lodged itself between the teeth and the alveolar membrane must be regularly removed. When the active inflammation has been subdued, or in some instances even when still existing, should it be found that the inducing irritation is connected with the teeth, we will require to determine whether any of these require to be removed.

*Malformation and Irregularities of the Teeth.*—A few of these, and probably the more serious from their congenital character and their dependence upon malformation of the jaw, are little amenable to treatment, others resulting from irregularities in wear and traumatic displacement are largely within the sphere of treatment.

1. With the incisors the more noticeable are (a) irregularity in their position; (b) abnormality as to number; (c) enclosure and retention of the temporary amongst the permanent.

In any of these conditions interference is not necessary unless the irregularity should interfere with the animal's power of prehension. The retention of the temporary are more likely to interfere in this manner; they are also easier of removal than the permanent when misplaced.

2. With the molars the abnormalities usually observed are (a) the existence of the interdental spaces; (b) individual lateral deviations from the natural line, by both of which facility is afforded for the production of alveolar abscesses by the lodgment of food materials between the gums and teeth, as well as for troublesome alterations in the course of regular wear; (c) in a few instances a similar retention of the temporary may occur as was noticed with the incisors. This latter condition in the molars is a more serious matter than in the case of the incisors. The retained tooth is here very liable to start inflammatory action in the alveoli, which, extending to the antrum and sinuses of the head, may result in all the evil of pus collection in these cavities.

The common irregularities of wear consist in the production of a sharp and overhanging edge on the outer wearing margin of the upper and on the inner margin of the lower row, together with a projection of more or less of the entire body of the last lower molar from its having escaped contact with its fellow above. In the former instance the buccal membrane or tongue is apt to be wounded in ordinary mastication; in the latter the unworn projection may penetrate above at the mastoid protuberance. All these conditions of irregularity of the molars are indicated by difficulty or peculiarity in mastication, profuse salivation, and probably, when existing for some time, loss of condition and energy. The food is generally tossed restlessly in the mouth, the head being held to one side, or when partially chewed it is dropped on the ground in quids, or balls. Positive evidence of the irregularities is afforded by examination with the hand of the teeth individually. When retention of a temporary molar exists, or where an unopposed tooth penetrates into the bone above, inflammation propagated to the sinuses may end in pus collection there; under these conditions the symptoms noticed in describing disease of these cavities are likely to be exhibited.

*Treatment.*—The connection of the molar irregularities proceeding from peculiarities in the wear of the grinding surfaces is effected chiefly by the use of the rasp. Where the projections are of considerable extent—*e.g.*, in the last teeth of the lower jaw—and where an opposing tooth has been wanted for some time, the elevation is easier removed by striking it off with a chisel or by cutting it with shears and afterwards smoothing the surface with the rasp. In many instances, particularly with the sixth molars, their extraction is more easily effected than either chipping or cutting the projection. When imprisoned temporary teeth are the disturbing objects, or in cases where the lateral deviation of the permanent ones from the correct line are offering facilities for additional disturbance, their removal is the only rational method of cure.

*Fractures and Dislocations of Teeth.*—The greater number of these lesions are the result of violence inflicted upon the structures affected. The particular manner in which this is carried out varies somewhat. With both molars and incisors the violence may be in the form of kicks from other horses; in the case of the incisors alone, they may be broken or displaced (*a*) by the attempts of the animal to detach the teeth and mouth from a particular position, *e.g.*, becoming fast by grasping with the incisors the projecting ledge of a metal manger; (*b*) by the mouth coming in contact with the ground during a fall. The same conditions occur in fractures of the jaw where the teeth sockets are involved.

*Treatment.*—In the greater number of cases of fractures of the ramus of the jaw, where the molar teeth are dislocated, it is advisable that they be removed, their retention being adverse to the healing of the bone where this is likely to take place. When not displaced, but fractured, the jaw being unbroken, the portion remaining in the socket may, in most instances, be allowed to remain. In the case of the incisors where the fracture extends through the alveoli, it is not so imperative that the teeth be removed, seeing that although distinctly shaken and loose, many of these, when the case is seen early and the teeth replaced carefully, regain their position in the socket with the healing of the bone; where broken it is better to remove the stumps.

*Caries of the Teeth.*—This consists in softening and decay gradually spreading until the cavity of the tooth is reached, when pain or toothache is liable to occur.

Although this process of change may start at some point where damage has been sustained to the enamel or bone by foreign bodies in the food acting detrimentally during mastication, it is not needful that such should occur. It seems more probable that the alteration is to be explained in depraved conditions of a constitutional or general character, the dental degeneration being merely part of a general failure of integrity of structure which is commonly encountered in such states.

The indications of this change are, difficulty in mastication, profuse salivation, quidding of food, with loss of condition and peculiar fœtor of breath. The extent of the caries and the exact situation are determined by careful manipulatory examination.

*Treatment.*—Temporary benefit may be obtained by cleaning out the cavity of the tooth where such exists, and plugging it with cotton wool soaked with creosote or pure carbolic acid. If desired, it does not seem beyond the reach of art that a permanent stopping of the cavity, when thus cleaned, might be carried out with some soluble preparation of gutta-percha, or an amalgam of silver and mercury. The radical cure, however, is to extract the diseased tooth, and this ought to be attempted before the caries has so destroyed the crown of the tooth that a hold with instruments is impossible. The two methods which are ordinarily employed for the



removal of these are (a) direct extraction by means of forceps or key, (b) indirect, by trephining the bone at the bottom of tooth-socket, and dislodging it by punching. The latter I have not had need to resort to, having in every instance been able to effect direct extraction generally with forceps alone, which, when properly constructed, are thoroughly efficient for the whole of the teeth of the lower jaw. In the case of the upper, I have received much assistance from the use of the key, previous to grasping the tooth with the forceps. These latter, when used for the upper jaw, require to be differently formed and somewhat larger in their mouths than for the lower.

Following the extraction of teeth, it is advisable, for some days, to have the food which finds its way into the sockets removed by the fingers, and to gargle the mouth well with a solution of common salt or chlorate of potash. In after years, should the animal survive, it may be needful to attend to the state of the opposing tooth or teeth, which, from want of attrition, may require to be cut.

The Professor kindly brought with him several instruments necessary for the efficient carrying out of the several operations, which were greatly admired.

A good discussion ensued, in which most members joined. Several questions were asked Professor Robertson, who kindly replied.

A cordial vote of thanks was proposed and carried by acclamation to Professor Robertson for his kindness.

The members then adjourned to the Adelphi Hotel, and there entertained the Professor at tea. After the cloths were removed, the usual loyal, patriotic, and professional toasts were proposed, duly responded to, and well received.

HY. SUMNER, *Hon. Sec.*

## NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

*(Continued from p. 50.)*

It is to be borne in mind that the Anthrax germs are not very volatile, but are somewhat fixed in character—a fact recognized in practice by the agriculturists of some parts of France, Spain, Germany, etc., who remove their flocks of sheep during the Anthrax season to higher ground, if possible, to prevent grazing on the flats; and the same is done by some people in Natal with their horses, to prevent Horse Sickness. I have frequently seen outbreaks of this disease cut short by simply disallowing grazing, and moving the horse or mule lines occasionally (at ten days' interval) to fresh places a few yards from their former lines. Mr. M—— of Durban, had a large stable, more or less open, on the Durban flats, and during the four or five years he occupied it, he only lost one horse from Horse Sickness, which animal was picketed outside the stable for only one night, owing to want of room. The morning after having been picketed out, the grass around this horse's picketing peg was found to have been eaten by him; and in eight days he died from Horse Sickness. All Mr. M——'s horses worked in the town, were stall fed on dry grain and fodder, were not allowed grass for food or bedding, nor allowed to graze, excepting that one horse for one night. Many horses allowed to graze on these flats suffered and died from Horse Sickness, although stabled during the night in town close by. The same can be said of the Mule Train Dépôt, Maritzburg, situated on the low flats there. When the mules grazed on them during the wet season, they suffered from this disease, but when stall fed and not allowed to graze, nor have grass cut for and given to them for food or bedding, but few suffered—in fact, the

disease was checked by disallowing grazing, although they crossed these flats to be watered. I have found over and over again that stall feeding on dry grain and oat-hay saved horses from the trouble; no matter where they were placed, or how deadly the season, provided they received no green fodder for food or had grass cut for bedding. "At Packisch in Germany, Anthrax was formerly a terrible scourge, and it was particularly noted that the outbreaks were more severe when the cattle grazed on certain parts of the fields, where some, which had died from Anthrax, had been buried, or when these parts were mown for stall feeding." (Fleming.)

Horse Sickness, as it came under my notice during a stay of five-and-a-half years in South Africa, I do not consider directly contagious, *i.e.*, by simple act of contact between sick and healthy, or by proximity. Time is too limited to allow me to quote cases or outbreaks to show why I think so; suffice it to say that by deduction from facts the germs of Horse Sickness appear to possess the same phase of existence as is shown by Pasteur to be the case with the *Bacilli Anthracis*. He has demonstrated that they have an intermediate phase of existence external to the live host's body, that the spores or active agents of contagion are not developed in the system of an affected animal whilst alive, but are germinated in suitable soil when the adult bacilli gain exit from the animal by the excretions or on death of the host.

Anthrax in some countries is said to spread by infection; but whether Horse Sickness in South Africa may become so or not I can't say.

The incubative period is from six to twelve days, a great deal depending upon the method of inception, the weather, and work the animal is doing.

*Symptoms.*—As I said before it is a specific fever with or without external manifestations or lesions in one or more organs of the body. It does not attack in one and the same manner all horses and mules affected; and it is a curious fact that the fattest animals in a stud fall victims first and die quickest, if all be placed under the same conditions of feeding, grazing, work, etc.

In some seasons most cases may present local manifestations, principally in the lungs, or it may be the spleen; at other times cases affecting the liver, tongue, or head may predominate; and any one form may be ushered in by, or terminate in, symptoms of the brain or bowels being affected. During the course of the trouble the local manifestations are not necessarily confined to the part primarily affected, nor is the disease in that organ held in abeyance, as it were, whilst other parts suffer; *e.g.*, a horse, affected primarily with the hepatic form, may subsequently present symptoms of the disease affecting the head and neck, or body generally (subcutaneously), or he may die from the pulmonary or bowel form in a few hours or days, as the case may be. At the commencement of the wet season cases of one form may predominate, whilst later on, as the dry season sets in, one or more of the others may. Horses and mules frequently die within an hour after being noticed by attendants to be sick (such cases being usually of the pulmonary or splenic forms), or they may linger on for some days. The splenic, pulmonary, and tongue forms are nearly always fatal; but the hepatic form, and when the disease affects the subcutaneous tissues of the head, it is found to be much more amenable to treatment, provided the weather remains fine. Are we to understand that the latter two forms are different diseases from the others named? I had no means of accurately finding out, but consider all the forms mentioned to be one and the same disease, judging by symptoms and *post-mortem* appearances, for they are all marked more or less by common and distinctive symptoms and lesions. Wet weather has a powerful influence over the duration and termination of the milder form of this disease when affecting horses or mules necessarily kept in the open—



a cold, wet night following a dry, warm day frequently causing a fatal dysenteric Diarrhœa with but slight cessation, if any, of the symptoms marking localisation of the trouble elsewhere.

In all the forms (distinguished in South Africa by different names) the systemic manifestations are much the same, and differ only in degree and rapidity of course each pursues. The symptoms are extreme and more or less rapid depression; dulness; shivering; staring coat; coldness of one or more legs; there may or may not be constipation; and frequently the case is ushered in by colicky pains. In nearly every case the conjunctiva is marked at the very outset by mulberry-coloured petechiæ; and puffiness over the eyes is almost invariably present. This puffiness is owing to effusion of serum into the supra-orbital cavities, which I have seen at the outset of all forms of Horse Sickness, and most commonly before any other outward manifestations were visible, or the animal, to the attendant's notice, sick at all. Temperature is always over  $103^{\circ}$  Fahr.

In this paper I mean to give the symptoms roughly of the different forms, according to their local names, for convenience sake, though properly this disease ought to be described as a fever with or without localised manifestations.

*Pulmonary Form.*—In this rapidly fatal form a horse or mule may be, to the attendant's notice, perfectly well when saddled or harnessed, fresh or pulling strong; and symptoms come on as a rule when the animal is doing fast work. It is so rapid in its course that many succumb within an hour's time.

Suddenly he lags, breathes rapidly, and perspires profusely; when allowed to stand he does so with legs wide apart, head protruded, nostrils distended, and perhaps within half-an-hour his eyes are staring and bloodshot; froth issues from the nostrils sooner or later, at first small in quantity, watery and pale, but rapidly increasing in amount, becoming of a citron colour and slightly adhesive to touch. He moves about but little, and becomes bathed in profuse cold perspiration; and the hollow spaces over the eyes become filled up, owing to effusion of serum. From pain he lies down frequently, but only for a minute or two. A hollow muffled cough ensues, and a stream of yellow fluid is ejected with the froth from the nose to some distance from him. Prior to death the tongue becomes livid in colour, and the conjunction covered with mulberry-coloured petechiæ. Finally he falls gasping for breath, froth streams from the nose, and, as he dies of choking, streaks of blood issue per nares with the froth. The pulse is rapid and feeble from the outset, and the temperature ranges from  $104^{\circ}$  to  $107^{\circ}$  Fahr., or more.

But fifty per cent. of the pulmonary cases do not succumb so rapidly, many lasting for one or two days.

In such you find dulness and depression first noticed, perhaps slight cough and colicky pains, more or less inappetence, a staring coat, shivering, and coldness of one or more legs. The conjunction is usually marked by petechiæ spots—the buccal membrane showing the same of a larger size and not so dark; there is puffiness over the eyes; bowels are constipated; pulse is fairly firm, sixty to seventy per minute; and temperature  $104^{\circ}$  Fahr., or more. Colicky pains are a frequent though not constant accompaniment. As the case progresses (in six or twelve hours) the respiration becomes accelerated; the pulse rises rapidly, and becomes extremely feeble; temperature ranges from  $105^{\circ}$  to  $107^{\circ}$  Fahr., or more, or it may have been very high from the outset; weakness and depression rapidly ensue; frothing from the nostrils sets in; and in many of the cases lasting over a day, swellings, due to effusion of serum, appear on the border of the ribs, on the head, neck, or body. The animal soon succumbs, once frothing begins; and the appearance of the swellings mentioned is always an unfavourable sign. In some cases the

brain is also affected, as is evinced by the animal wandering about in a semi-unconscious state or standing boring his head, and passing urine and fæces involuntarily.

Sometimes there is no frothing till just a few minutes before death, an enormous quantity then pouring from the nostrils—but such cases, so far as I have seen, if purely of the pulmonary form, have not been sick more than a few hours.

A few animals pull through the pulmonary form, even after frothing has set in; but the discharge in such is slight, never copious, so far as I have seen.

I have met with a few cases marked by the typical fever lasting a day or so, followed by swellings appearing on the ribs or head and neck, and subsequently by the frothing. In many cases of the other forms, to be hereafter mentioned, pulmonary complications set in.

I may mention here that Mr. Duck, whilst acting as I.V.S. in the Bechuana-land expedition, saw and reported some cases of Anthrax in cattle at Vryburg, marked by the same symptoms and *post-mortem* appearances as are seen in the pulmonary form of Horse Sickness, but their history I do not know.

*Dik Kop*.—That form termed *Dik Kop*, or big head, is characterised by an œdematous painful swelling affecting the head, preceded for a day or two by feverish symptoms and other systemic manifestations more or less marked, and already roughly described. The swelling first appears on the lips and edges of the nostrils, accompanied by puffiness over the eyes, and rapidly extends—sometimes in three or four hours, but usually twelve to eighteen—over the whole head and throat to such an enormous extent that sight is obstructed, and respiration considerably interfered with, and in some cases the swelling extends to the base of the neck. There is shedding of tears; the eyelids are everted and conjunctiva swollen, protruding and marked by effusion of blood and by petechiæ. The breath is now foetid, and the buccal membrane furred and purplish in colour. The pulse at first is from sixty to eighty per minute, and the temperature about  $105^{\circ}$  F., the latter rising to  $107^{\circ}$ , or more, and the former becoming quick and feeble as the swelling of the head progresses. The swelling becomes less painful, but does not crepitate to the touch, as in Symptomatic Anthrax seen in Great Britain. Usually such cases last only three or four days, but in such that survive (under ten per cent.), imperfect maturation takes place in from six to eight days, not at one but at several points, and evacuation gives exit to a sanguineous, dirty, foetid fluid. In a few days more the swelling subsides so far as to permit the animal to eat with some degree of comfort; he gains strength slowly, becomes livelier, and improves in condition, though two or three months or more will not see him fit for work. Occasionally a few cases of *Dik Kop* recover in a few days, though unfit for work for two or three weeks, having been so weakened; but in these the swelling is confined to the lips, nostrils, and submaxillary space, with puffiness over the eyes, and the fever does not run high; temperature may not rise over  $105.5^{\circ}$  F. Maturation as a rule in such cases does not take place.

Whether the œdema of *Dik Kop* be extensive or otherwise, if frothing from the nostrils supervene, the case may be looked upon as hopeless; but frothing in *Dik Kop* is seen, as a rule, only if the animal be forced to march, or even travel a short distance when sick.

Fatal dysenteric Diarrhœa may and does set in, particularly during sudden changes of weather for the worse, and if the patient be in the open and exposed; at other times swellings appear on the border of the ribs, or in patches on the body during the progress of the trouble. I have never seen a case of *Dik Kop* recover, or last two days, after any one of these three complications set in.

Death is caused by asphyxia or by exhaustion.



*Blue Tongue.*—In this form, beyond slight feverish symptoms, nothing at first may be noticed by the attendants, but slight disinclination to feed, quidding of his food, that he swallows with difficulty, and is fond of keeping his mouth in a bucketful of cold water, or against anything cool. On closer examination the temperature is found to be about  $105^{\circ}$  or  $106^{\circ}$  Fahr; the tongue swollen, furred on upper face, intensely congested on its lateral faces, and sometimes covered by mulberry coloured petechiæ; phlyctenæ are sometimes present on the tongue; and there is a slight discharge of thin serous fluid from the mouth which sticks to the edges of the lips, causing excoriation. Extreme depression and lassitude rapidly set in; the temperature rapidly rises, and other signs of high fever ensue. Once present, the swelling of the tongue rapidly increases, its colour deepening to a dark livid purple; the lips become œdematous; and there is filling up of the supra-orbital spaces. Inappetence is present, of course, from inability to masticate, and the thirst is great. Frequently within twenty-four hours from his being first noticed sick, the tongue becomes so enormously swollen, that the animal is forced to keep his mouth constantly open, with tongue protruding; and in some cases the pharynx is involved in the swelling, causing protrusion of the head and noisy dyspnœa; and so the animal may continue for another day or more, a most pitiable object, till death ends his misery. If the animal be exposed to cold wet weather, fatal diarrhœa may set in and carry him off in a few hours. Sometimes symptoms of the fatal pulmonary form setting in accompany Blue Tongue; and I have seen, though seldom, œdematous swellings appear on the body prior to death. Very few cases of Blue Tongue recover, but in such that do the tongue is noticed to decrease in size; there is rapid depilation, leaving raw red spots on its upper and lateral faces; the fœtor gradually ceases; appetite returns; the temperature falls, etc. Complete restoration to health is not effected for three months or more—the bowels are easily upset; the skin remains dry and scurfy; and he does not put on flesh, though strong and well, for perhaps a year or more.

*Splenic Form.*—The splenic form is most fatal; seldom, if ever, does a horse recover, so far as I have seen or heard. It is very frequently so insidious and rapid in its course that horses and mules have been found dead in the morning, which to all outward appearances were well and feeding heartily the night previously, and were not noticed by the guards on the look out to have been sick, or probably thought by them to have been simply resting. In such as are seen to last some hours—seldom a day—lassitude and depression are most marked; the extremities are deathly cold; he shivers in fits and starts; there is an anxious expression of face, with lips retracted and ears drawn back; puffiness over the eyes, though not in all cases; the pulse about 100 per minute, feeble and rapid, or quite imperceptible at the jaw; respiration is quickened and sometimes stertorous; the conjunctiva rather pale and marked by petechiæ; the buccal membrane often purplish in colour; the mouth cold and clammy; and the temperature  $105^{\circ}$  to  $107^{\circ}$  Fahr. or more. Swellings, due to serous effusion, occasionally appear on the body, and frothing from the nostrils, with the other symptoms of pulmonary complication, may set in, but as a rule only just before death.

*Bilious form.*—The bilious is the mildest of all forms of Horse Sickness, and is amenable to treatment in about 70 per cent. of the cases, if the surrounding circumstances and weather be favourable. At the outset the animal is dull, depressed, and more or less off his feed; fæces are usually pellety and coated with mucus, sometimes dark red in colour, soft and fœtid; urine high coloured and copious; mucous membranes yellowish and marked with petechiæ; pulse from 60 to 70 per minute; temperature  $104^{\circ}$  or  $105^{\circ}$  Fahr.; cold extremities, and more or less shivering; and there is frequently puffiness over the eyes in even this mild form. The following day

dulness and depression are more marked; there may be complete inappetence; slight diarrhœa may have set in with or without colicky pains; pulse is feeble and more frequent, and temperature slightly raised. There may be on the third day, but only in very mild cases, a marked improvement for the better—he is inclined to feed and take notice of affairs round about, but is so weak that he totters if moved round sharply, conditions which good nursing rapidly remedies.

But if the disease be progressing, the animal is so dull and depressed that nothing seems to rouse him from lethargy; he may stand boring his head in a corner, or resting it on the manger, or he may be listlessly standing with head held down towards his knees, as if suffering from headache; the diarrhœa may be persistent, watery, and fœtid, or it may have ceased and given way to soft fæces; mucous membranes become yellowish red, and the petechiæ enlarged; pulse is feeble, 80 to 100 per minute; and temperature raised to 106° Fahr. In this state they usually remain for two or three days more before favorable signs set in, when he begins to eat heartily, ravenously, in fact; the extreme depression suddenly gives way; temperature falls rapidly; pulse becomes firmer and less frequent, and the urine clearer and less copious.

But unfavourable signs may and do progress in 30 per cent. of the cases, owing either to the progress of the trouble, to climatic changes, or to the patient becoming chilled, if in the open. Frequently swellings, owing to subcutaneous effusion, appear on the neck, body, or border of the ribs (a favourite site)—small at first, but rapidly increasing in size—which may or may not be accompanied by symptoms of the pulmonary form, which latter set in rapidly as a rule, and carry him off in a few hours; or he may die in a state of coma or delirium. A few cases end fatally from dysenteric Diarrhœa.

*Post-Mortem Appearances.*—The *post-mortem* examination of bodies of animals which have died from any of the forms mentioned reveals the same characteristic lesions as are seen in Anthrax fever. Immediately after death the body becomes distended with gas, and rapid decomposition is most marked. The blood is fluid, and of a tarry appearance, and uncoagulated. Section of the swellings which may have occurred on the ribs, neck, etc., shows them to be due to serous or lymphoid effusion and infiltration, somewhat sticky, yellow, and firm. In cases that have lived over a few hours, the chest cavity contains a small quantity of thin yellowish serum (sometimes a gallon or two in the pulmonary form), and the same is frequently found in the pericardial sac and abdomen; lymphoid exudation on and beneath the pulmonary and parietal pleuræ, and sometimes also around the bronchi and base of the trachea. The lungs are congested, dark and heavy; and if there has been frothing from the nostrils, there will be froth and serous fluid in all the bronchi. The pulmonary lymphatic glands are enlarged and marked by dark streaks radiating from their centre.

Heart is flaccid, the right side of which, and the pulmonary artery, contain black semi-fluid blood, and frequently a long, thin, almost black clot; the left side holds scarcely any blood, but a small parti-coloured clot is frequently found attached to the mitral valves. The endocardium is more or less ecchymosed, and the muscular pillars often completely black.

The mesenteric veins are gorged with black blood, and the intestines show patches of more or less congestion.

If dysenteric Diarrhœa existed prior to death, the coats of the large intestines, and, to a lesser degree, the small, are found to be considerably thickened from exudation, dark, red, and flabby, and the fæcal matter fœtid and fluid.

Kidneys dark and softer than normal.



Spleen frequently enlarged, very friable, and engorged with black, grumous material, and its capsule ecchymosed—conditions always present in the splenic and other rapid forms of Horse Sickness, and, in a lesser degree, in the others.

Liver, in the bilious or hepatic form, is enlarged, heavy, friable, and dark in colour.

In Blue Tongue, section of that organ reveals a livid colour, softness, and streaks of yellow exudation in its substance.

In Dik Kop there is found subcutaneous and intramuscular yellow serous infiltration, and, in cases of a few days' standing, foetid sero-sanguineous pus.

Mr. Wiltshire, of Natal, has found the *Bacilli Anthracis* in the blood, froth, spleen, and serous effusions in the chest and on the body.

#### *Treatment.*

As you are all aware, innumerable nostrums have been paraded for public favour, from time immemorial, for the cure and prevention of Anthrax, and are, to this day, for Horse Sickness in South Africa. I have given trials to several, and found each utterly useless.

So many cases of Horse Sickness occur so rapidly, or are so far advanced before one is asked to visit them, that treatment is of no avail; and especially is this the case in the pulmonary and splenic forms.

Several methods of treating outbreaks have been tried, and the system I lately adopted in Natal, with a fair amount of success, was:—

Stoppage of all fast work in the corps as much as possible; removal of horse or mule picketing lines to fresh, higher, and apparently healthy ground, which lines were again shifted every eight or nine days; disallowance of all grazing; animals to be watered at a good-sized stream, if possible, avoiding marshes and puddles of water; disallowance of all green fodder. The temperature of each horse in the regiment or corps was taken every other day, and those just over  $100.5^{\circ}$  Fahr. placed on a separate picket line (No. 1) in the open; those between  $101^{\circ}$  and  $103^{\circ}$  on a second line, well away from and to the lee-side of the other; and those over  $103^{\circ}$  Fahr. on a third line, also to the lee-side, with each horse on the 2nd and 3rd lines segregated; and to each horse on those two lines as much carbonate of ammonia was given in their drinking water as they chose to take. The temperature of all those put aside was taken morning and evening, and, as I deemed expedient, removed those showing a rise or fall of temperature to one or other of the lines, but never back from No. 3 to No. 1 line if their temperature went down. Thorough disinfection of the ground with quicklime, chloride of lime, and carbolic acid was adhered to; the grass and bedding burned; pits dug for refuse, in which droppings and sweepings were burned and disinfected; a nose-bag kept for each horse for feeding purposes; buckets for each line; men told off specially; and grooming-kit, blankets, etc., disinfected daily. Nutritious soft diet was allowed, and the bowels kept regular and fæces soft. The above system can be carried out on peace service, in a standing camp, or in any stud, but not, of course, with troops on service.

As symptoms of one form or another were manifested, further treatment was adopted—practically to all on No. 3 line. A gentle saline laxative was given; constant fomentations applied to the chest and abdomen—in fact, they were made to perspire freely all over; two or more blankets kept on; and mustard and bandages were applied to the legs. A cold wet cloth on the nape of the neck did good, especially if the weather was hot and sultry. Fresh air, comfort, and warmth—to the extent of making them sweat even in hot weather—with careful nursing and liberal, nutritious diet, if they would take it, were found indispensable; and protection from the sun and extremes

of weather were resorted to where possible. Medically, but little beyond one ounce of nitrate of potass daily, and carbonate of ammonia *ad lib.* in their drinking-water was given. Ether, brandy, and whiskey, in small doses frequently repeated, were given to some, especially in changeable weather, or as they required stimulants when sinking or recovering. To combat frothing from the nostrils, I have given trials to tracheotomy, the inhalation of ether, of chloroform, of mixtures composed of acetic and carbolic acids, of carbolic acid and ether, of liq. ammon. fort. and carbolic acid, and several others, with very slight, if any, success; the two or three cases I have seen recover after frothing set in would probably have done just as well without the medicine by inhalation. Carbolic acid and chlorate of potass I once thought fairly reliable medicines for Horse Sickness, but latterly trusted mainly to carbonate of ammonia. Incision of the swelling of the head in Dik Kop, or of the swellings occurring on different parts of the body in any form of the disease, hurries on death, in my opinion—constant fomentation proving more beneficial.

Bleeding, blistering the chest, and such heroic measures, commonly recommended by many people in Natal and at the Cape, are not to be advocated. I bled once in what I thought at the time a good case for it; but the horse died very much sooner than I expected. I have tried hypodermic and intravenous injection of carbolic acid, liq. ammon. fort., permanganate of potass, and various other medicines, but found nothing seemed of more use than ammon. carb. per oram. Mr. Wiltshire has had much success with sodæ hyposulphite; but I am sorry to say I did not give it a trial.

On recovery tonics, gentle exercise, and liberal, nutritious diet are urgently required in all but extremely mild cases.

A special place for burial in poor, dry, sandy soil, if available, well away from any stream or marsh, was set apart—which ground should be confined by bush or rail—and the carcasses buried six feet deep at least (though they frequently were not), and all the debris deposited either with the dead body or burned in the pits dug for that purpose. Quicklime and carbolic acid were placed in, over, and all round the grave. Deep burial is, no doubt, of much service, but in cremation should be found the acme of success in that direction.

#### *"Salted" horses of South Africa.*

The term "salted" strictly means that the horse said to be "salted" has recovered from an attack of Horse Sickness, and will probably not suffer again; hence, such animals are highly valued, especially by people about to proceed on a long journey.

But all those horses said to be "salted" are not. It is thought by many people out there that, because a horse has lived for some time at a place where Horse Sickness was prevalent, or had not fallen a victim to some outbreak, whilst others died around him, he is safe for the future, and hence can safely be termed and sold as "salted"—rather an absurd idea, as you know. At the same time some horses and mules may suffer from the disease in so mild a form as not to have attracted the notice of those looking after them, or but little. I have seen horses paraded as "salted" which had been treated for Horse Sickness by the owners, whilst suffering from some slight complaint—not Horse Sickness—such as simple Catarrh, simple Fever, a contusion on the body or the leg, or swollen lips caused by the sting of an insect; and, no doubt, this is why one hears so frequently of horses dying from this disease that were said to be "salted."

#### *Prevention.*

Allow me, gentlemen, to trespass a short while longer on your time and good-nature by saying a few words on prevention, as lately carried out by the troops



in Natal. When one considers how deadly and insurmountable a disease this is, and has so far been, prevention may seem more easily recommended than it is capable of being followed out. Certainly preventive measures are not easily carried out on a campaign, but there is no reason why ordinary precautionary measures should not be adhered to without any, or but slight, inconvenience to those concerned.

As stated already, an injudicious system of grazing is, to my mind, the main factor in the causation of Horse Sickness, and the system of prevention I advocated, when the power to advise was given to me, was as follows:—To disallow grazing if practicable; animals to be picketed on what appears to be healthy ground, high and dry; and to avoid bogs, marshes, all flat ground at the side of slow running streams, stagnant pools, and ground polluted by dead or buried carcasses. Horses and mules to be kept night and day on high or sloping ground, away from “vleys” or soil always more or less moist; and if permitted to graze they were not to be turned out, even on the hills, till the grass had been dried by the sun; animals always to be watered at a good running stream. If some cases of Horse Sickness occurred whilst encamped for a time at a place, it was always found advisable to move all the animals to higher and drier ground, not necessarily far, but to fresh ground, to all appearance healthy. Disinfection of the old camp was also carried out.

Stall feeding on grain and dry fodder is, and has been proven without doubt to be, the best system where practicable, but care must be taken that, if grass be cut for the animals’ bedding, it does not come from low-lying “veldt” bogs or contaminated ground.

It was advisable, when passing through districts known to be fertile sources of the trouble, either to tie the animals up short, or put nose bags or muzzles on during the night, or whilst halted to prevent them eating the grass, besides disallowing grazing. The disadvantages of tying them up short are that several out of the many fret, worry, and tire themselves by not being able to lie down, and occasionally there is a case of strangulation, caused by the animal reining back, and the head collar rope becoming tight round the neck. Nose bags are certainly useful in preventing horses from eating the grass at night, or when off saddled during the day close to, or upon, any dangerous looking ground, but I maintain they are worse than useless in a standing camp, considering that the grass disappears from the horse lines in two days; and that anyone imagines that the nose bag filters the air inhaled by the animal is incredible, but which, I am sorry to say, many of the staff thought, during a late expedition in South Africa. If pulled well on the horse’s head (which was the order), it nearly chokes him by pressing on the nostrils; again and again have I seen horses nearly *drowned* by the nose bag becoming half full of water, which ran in from off the horse’s head during wet weather; and, no matter how put on, the air remains unfiltered in any way. If kept on night after night, no matter in what situation the animals be, they tend to do harm by inducing nasal Catarrh. If specially made for the purpose of filtering the air, they would require, not only to be almost indestructible, but adherent to the skin around and above the nostrils. During the Zulu War of 1879, the 17th Lancers used flannel nose bags, but I believe that regiment suffered as much as other corps in proportion, in Zululand, and the nose bags were very soon discarded, owing to wear and tear. In several other expeditions it was found that, without having nose bags put on constantly, no matter how wet the season or where the troops were encamped, no more sickness occurred than would have if nose bags had been kept on constantly, when ordinary simple precautions relative to grazing were strictly adhered to. Whilst kept in the open in South Africa, it is well known that horses rarely suffer

from Catarrh, whereas in the Bechuanaland expedition, referred to above, 50 per cent. or more of the horses suffered from it, the result of constantly wearing nose bags at night—some so badly as to be unfit for the lightest of work for some days.

Catarrh, as you know, weakens a horse to a greater or less extent, and therefore, if he be susceptible, predisposes him, to a certain degree, to zymotic and other complaints that may be common at the time; and more especially would this be marked if the germs causing Horse Sickness in South Africa existed chiefly in the atmosphere, which many people out there still maintain, but where luckily, in my opinion, they do not have their chief habitat, as has been proven by many scientists to be the case with Anthrax germs in Europe, and is most clearly and practically demonstrated by agriculturists in England, France, Germany, and other countries.

Protective inoculation will, in the hands of Mr. Nunn, A.V.D., I trust, be the means of combating this trouble in South Africa. It is a curious fact worthy of notice in relation to Anthrax, which M. Pasteur points out, "that some breeds of sheep tolerate very badly, or not at all, the vaccine, which is efficient for another breed"; so that probably cultivated virus, specially prepared for horses and mules of different breeds, will have to be the course pursued in South Africa in inoculating for Horse Sickness.

For what length of time immunity can be conferred, if this disease be Anthrax, is not yet definitely shown—the operation having been in force on the Continent for only a few years, though protection afforded for even that short space of time should save many lives.

Col. COMBE wished to know whether Loodiana disease in India and Horse Sickness were the same malady?

Mr. SANTY wished to know if "Quarter ill" was Anthrax? whether Horse Sickness was met with in towns? He could only compare Mr. Rutherford's description of this disease to three cases in cows he had to attend, where the throats swelled, and a frothy discharge flowed from the nostrils, and all died in a few hours. He should also like to know if hay was capable of conveying the malady? whether human subjects ever suffered? and whether the inoculating material would have to be attenuated before being used for inoculating purposes?

Mr. BANHAM said we were very much indebted to Mr. Rutherford for the trouble he had taken to bring this subject under our notice, not from its immediate importance to us as practitioners, but from its bearing on allied diseases we were acquainted with. Few of us are in a position to discuss the pathology of Horse Sickness, as we had never had an opportunity of seeing it; but, judging from what Mr. Rutherford had told us, I should question its being "Anthrax," as we are acquainted with that disease in England. For Mr. Rutherford tells us that cattle can graze with impunity where horses die, and the disease is never communicated to them, neither is Splenic Fever prevalent to a very large extent. Now if this were Anthrax, due to *Bacillus Anthracis*, cattle would undoubtedly suffer. That it is an anthracoid disease is evident; but I am disposed to look upon it as a peculiar anthracoid malady, the micro-organism of which will probably be found to differ in some way or other from that producing Splenic Apoplexy in this country; and I trust Mr. Nunn, who is in Africa, will be successful with his investigation, and that before long we shall be able to speak with more positiveness and accuracy of Horse Sickness. In answer to Mr. Santy, I should say that "Quarter ill" is not Anthrax. It is important that Anthrax should be defined, now that the Privy Council order cases to be reported. Splenic Apoplexy or Fever is, I believe, the *only* disease meant by the term Anthrax, although cases of Gloss-anthrax should be reported, to test the views of the Privy Council.



Mr. OVERED said the subject was of great importance to inspectors ; and he had a case of a colt whose head swelled to an enormous size, was deathly cold, sanguineous discharge from nostrils ; it died in twelve hours. In his opinion this was a case of Anthrax ; what gave him this opinion was a bullock died of Anthrax, and was bled ; pigs partook of the blood, and died from similar symptoms to the colt, viz., swelled throats, the skin of which was a dark purple-colour from one ear to the other, and all died.

Mr. GOOCH asked Mr. Overed if he had ever known primary Anthrax in the horse produce the disease in other animals.

Mr. OVERED said he had not ; the few cases which he considered Anthrax in the horse were so situated that no contamination or inoculation could possibly have taken place.

Mr. SHIPLEY also gave symptoms of a case which he considered to be Anthrax in the horse, as did Mr. SANTY ; at last if they were not cases of Anthrax they were at a loss to know what to term them.

Mr. RUTHERFORD, in reply to the various questions, informed the members that he believed Loodiana disease and Horse Sickness to be different forms of one and the same malady. He also said *Black Quarter* was very prevalent in South Africa, although he did not think that there was anything about it in common with Horse Sickness. He was not prepared to say whether hay could be a medium of conveying the disease from one district to another, as hay was a commodity unknown in South Africa. The animals in towns used to be much more frequently affected than they are now ; this he attributed to improved drainage and hygiene. He had known a case where some natives partook of the flesh of horses killed by Horse Sickness, and they succumbed to malignant pustule. With regard to inoculation, he would say that the fluids of the body require attenuation, although the precise form it should assume he was unacquainted with, but it was being investigated at the present time.

The PRESIDENT said he was sure the members were extremely obliged to Mr. Rutherford for his kindness in reading them such an instructive and valuable paper ; personally he had learned much from it, and he was sure if Mr. Rutherford would allow it to be published the profession generally would appreciate it ; he begged to propose a hearty vote of thanks to the essayist, and asked him to give the society the benefit of his attendance at its meetings during his stay in Norwich.

Mr. SANTY seconded this, and assured Mr. Rutherford that the society was always proud to have the presence of any members of the A.V.D. at their meetings whenever they would give them the pleasure.

Mr. RUTHERFORD said he thanked the Association for the kind manner in which they had received his paper. He was always glad to assist such meetings when he had the opportunity, and should be pleased to avail himself of the society's invitation to attend their meetings while he was in Norwich. The society was at liberty to use his paper as they pleased.

After the meeting the members had tea and spent a most pleasant evening.

R. S. BARCHAM.

#### ARMY VETERINARY ASSOCIATION.

THE sixth meeting of the Army Veterinary Association was held in the lecture-room of the Army Veterinary School, Aldershot, on the 13th ultimo, when the following members were present :—Inspecting Veterinary Surgeon H. B. Walters, Veterinary Surgeons 1st class, D. J. Hinge, H. Thomson, F. Duck, R. Poyser, M. Anderson, and F. Smith ; Veterinary Surgeons F. Raymond and W. R. Hagger.

The meeting commenced at three p.m., when the following practical paper,

which was well received, was read by Veterinary Surgeon 1st Class R. Poyser, after which the several points were freely discussed :—

#### A RETROSPECT OF THE AFGHAN WAR.

It is proposed to review the work of the Army Veterinary Service in India, preparatory to an Afghan campaign, and to consider some of the subsequent duties that devolve upon it.

You are not to expect anything beyond a relation of ordinary experiences, such as have occurred to those who have served there ; but, as teachings of the past, they may afford a few practical lessons in a very near future, when many of the phases of the veterinary history of war are certain to be repeated.

When war in or beyond Afghanistan is imminent or declared, the Army Veterinary Surgeon has to operate outside the ordinary routine of regimental practice, and turn attention to a duty upon his efficient discharge of which too much importance cannot be attached.

Though this duty will, if possible, be allotted to the senior and more experienced in the service and country, a very junior officer may suddenly, perforce of circumstances, find himself face to face with difficulties that have hardly crossed his mind, and to which he has not been educated, but which he is bound to tackle at a moment's notice, and is expected to handle as if he were to the manner born.

Allusion is made to the selection of transport animals. This, in India as elsewhere, is usually conducted under the direction of a committee, a veterinary surgeon being the most important member, and without whose initial action the other members ought not to be prepared to proceed.

It may not be out of place here to say that the ability necessary to make a successful selecting and purchasing officer does not all come by intuition. Even a natural gift in this, as in any other direction, needs the training that practice and experience alone can develop and mature. And although many veterinary surgeons develop their own abilities, whether natural or acquired, at their own personal risk and expense, in order to make good equine selections for sporting and other reasons, there are others who, lacking these desirable inclinations, and for want of opportunities arising from public necessity, would feel extremely diffident to accept the duty in question for the first time. It may not, therefore, be presumptive to think that a more general distribution of this class of work over the Department, at home and abroad, would be an obvious advantage to us, and, let us hope, not detrimental to the service. Selection may be necessary at times ; nevertheless every Army Veterinary Surgeon would be all the better for a turn at the duty implied.

The transport animals would consist of ponies, mules, donkeys, bullocks, and camels.

To carry out the business of selection easily and thoroughly, a systematic arrangement is to be adopted from the beginning, as some hundreds may have to be inspected in a single morning.

After each class has been disposed in line, and, remember, facing the sun, the veterinary surgeon has special regard to the existence or non-existence of contagious and infectious diseases.

This is his first care, especially with equines whose nostrils he actually handles and looks into. He cannot entrust this duty to a subordinate. It can be rapidly and thoroughly executed with the assistance of a couple of intelligent assistants, who alternately move forwards and hold up the animals' heads to the height required.

At this time, too, he considers age, sight, physique, and condition, rejecting at once and for all those that are too young and too old, and those that are blind, deformed, weakly, pregnant, and the vicious ones, if detected.



He assures himself of the integrity of the skin—a most important point—of its apparent freedom from Mange, from hairless and doctored patches, from warts, scars, brands, and firings, especially about the weight and gear-bearing surfaces.

This process of ejection by the expert places the amateur section of the committee in a position to deal with the more general subject of selection of animals that are shortly to serve under the most unfavourable and trying conditions—viz., to long and constant marching over all kinds of roads and tracks, up and down mountains, across sands and bouldered beds, and through rivers; to irregular watering and feeding; to scanty, improper, and indifferent rations; to vicissitudes of weather and extremes of climate; to exposure always, and to the torture of insects; to the galling effects of ill-fitting and badly-adjusted gear; to heavy and awkwardly placed loads, and to the management of those who don't understand them; to treatment that could not be applied to machinery; indeed, to all that is conveyed by that most comprehensive term, "the exigencies of the service," a process well adapted in this case to destroy and cripple animal usefulness.

It is, therefore, essential to select the age, the physique, the conformation, condition, and serviceable soundness best fitted to maintain the longest stand against the deteriorating influences enumerated.

Speaking of equines, the next course is to observe conformation, especially with regard to its character as bearing upon draught and pack service, and to practically determine the weight-carrying power of pack animals.

This also embraces the important consideration of soundness sufficiently serviceable for the work, the make and shape of limbs and feet, which should be set on with respect to the body and to each other, so as to prevent brushing interferences in progression and under weight; hocks, elbows, knees, and fetlocks deflected inwards, or in actual contact, and long sloping pasterns are, of course, serious objections as weight-supporters and conveyancers.

Body conformation is a very important matter, inasmuch as the high-withered, the sharp-spined, the extra long and the hollow-backed, the high crouped, as well as the shallow-chested and barrelled, and the hollow-flanked are unfitted to carry weights. Such forms—though there may be no fault to find with condition, with the pack-saddles, or loading—are not enduring, and soon gall. Large depressions behind the scapulas are also objectionable.

Good straight spines and backs, with well-arched ribs, which generally ensure depth of chest and barrel, and are accompanied by good loins and quarters, will be insisted on. A slight upward arch of the back may not be a disadvantage, provided the ribs do not slope too acutely from their spinal attachments.

It is absolutely necessary to start with a fair amount of condition, which, though not quite a correct term in this case, implies a something that can hardly be expected to increase under the usual circumstances of transport life and duty. There ought, at any rate, to be something in hand—something, therefore, whether fat or condition, to begin upon, either of which is much easier to lose than to maintain or increase.

The carrying capabilities of ponies and mules may as well be roughly tested on the spot by putting up a couple of eight-stone men on each. This useful plan affords an opportunity to observe spinal deflection, and those altered positions which such a weight produces upon the legs, especially upon the hocks and fetlocks, during progression; and no animal may be taken that cannot *now* walk well. It may not be quite fair to try animals so weighted at a trot, but this course can also be recommended.

As regards size for pack and cacolet purposes, 13 to 14.2 are the best, such being found to be well adapted for the requirements of most services and countries; for fording strong, deep currents the smaller ones are

not suited, camels or elephants being, if available, substituted. At the same time, it is marvellous how safely much smaller ponies and cattle can cross such a stream as the Cabul river under loads.

The sizes quoted, assuming their other proportions favourable, are usually sturdy, enduring, easily loaded and unloaded, fed, and kept in condition and marching order, whilst their carrying powers equal or exceed those that are taller and lankier.

Mules, unless they possess bulk, build, and physique compatible, and increasing with, every inch above 14h. 2in. are to be considered as general failures for general service purposes. Under any conditions it should be the rule to employ them in *suitable* carts or waggons, whether as singles, pairs, or teams.

The mules of the C.T.C., at Aldershot, and which run over and probably average about 15h. 2in., are generally leggy, light and narrow-bodied, short of bulk and bone, and are certainly not adapted to work in the general service waggon. They may be regarded in every existing respect as failures. They cost as much as horses, they eat as much, they suffer similarly to young horses under similar conditions, in the way of strangles and chest affections. They suffer more from exostotic disease, and they cannot do the work of horses, that is, under current circumstances.

Ponies as low as 12 hands and even donkeys make excellent transport if properly fed, cared for and loaded, and if not overweighted, and provided they are not employed and forced to march with much higher animals, having a faster pace.

Similar remarks as to selection apply to ox transport; the smaller, more active and compact bullock being best fitted for pack purposes, the larger and heavier for draught service.

In selecting these, the veterinary surgeon pursues a similar course, making allowance for bovine differences, according special attention to spinal and costal formation, to the limbs and feet and the act of progression, and also to the skin, more particularly to it about the yoke, collar, pack, and harness sites.

Up to this point the army veterinary surgeon will have found himself at home, more or less, for with the horse, mule, ass, and ox he has had a life-long experience; but when circumstances suddenly force him into making an intimate acquaintance with an animal he has never seen outside a menagerie, he will find much to learn of the camel and his anatomy and physiology, his constitution and management, and not a little to think over and acquire somehow, before he can call himself an expert in the selection of this most useful ruminant, for baggage and riding purposes. Those who made the acquaintance of the camel for the first time in Egypt will know how far this is true.

Those points only will be discussed which are likely to ensure the selection of the fittest; and as much of this turns upon the important subject of age, a rough sketch of the development and peculiarities of the camel's incisor teeth and tushes only will be given, for the molars are practically of no concern when judging of his age. In this direction the resources of the Army Veterinary School will materially assist us by its plates and specimens of the camel's teeth.

At two years old there are six incisors and two tushes in the lower jaw, and two tushes in the upper one, all of which are temporary. The incisors are small, white, sharp-edged, and chisel-shaped; the tushes small and pointed, especially the upper ones.

At three, the incisors are blunt, the central ones being more worn than the lateral, and these more than the corner ones, whose cutting edges are yet pretty fresh.

At four, all incisors are half worn away, round, stumpy, and peg-like, set wide apart and much discoloured.



At or before five, the incisors are worn down to the gums, and such a mouth may be mistaken for that of a very old animal by the uninitiated; but the smallness of these dental remnants readily obviate this error, especially if the absence of the powerful tushes be observed.

At or before five, the central pair of permanent incisors are cut, and rapidly develope into long, broad, chisel-like teeth, contrasting most markedly with the temporary stumps on each side.

At about six, the laterals are cut; and the corners at seven, about when the upper and lower temporary tushes are shed and replaced, whilst about this time the four upper and the two lower supplementary tushes appear.

At about eight, the front dental development may be considered complete, when there are six incisors and four tushes in the lower jaw and six tushes in the upper one, where, as in ruminants generally, there is the dental pad. The supplementary tushes are much smaller and blunter than the genuine ones.

At eight, the central incisors show decided wear; at nine, the laterals; at ten, the corners, the tushes now rapidly losing their sharp points and edges.

As old age approaches, the incisors separate, shorten, become peg-like, and more and more discoloured, whilst some of the tushes will be much worn, partly by attrition on each other.

In extreme old age, the incisors will be level with the gums, and the tushes correspondingly worn.

A camel of about five years of age corresponds to a horse of about two and a-half, the general development of each being about the same; this comparison is worth bearing in mind, and so is the next paragraph. When inspecting camels' teeth, it is advisable, in order to avoid being bitten and slavered all over, to allow the camel-attendant to handle the beast and show the teeth.

The subject of age and ageing has a most important bearing upon the efficiency or inefficiency of the animal transport service.

Oliphant found forty-four per cent. of donkeys under four; thirty-one of mules and ponies under four, or too old for work at the time of purchase or hire; also thirty-one of camels, with less than four permanent incisors, or too old; and fourteen of bullocks, unfit from the same cause. Many who served in Afghanistan can fully bear out these statements, and testify to the fact that many donkeys, mules, and ponies were purchased and hired at one year old, more at only two, more at only three, and still most at a very old age, but not by veterinary surgeons. Camels, too, were purchased and hired whilst quite infants, and so long as purchasing and hiring officers are left undirected by the expert in ageing by the teeth, and in judging of other points, of which the average amateur can know but the little that makes him dangerously all-sufficient, so long will our animal transport be obtained physically useless from extreme youth and age, and so much greater will be our animal losses and general inefficiency therefrom.

Well, then, having rejected camels under six—that is with less than four permanent incisors—and over an age which the character of the teeth and physique point out as unsuitable, the face and head may be noticed, especially that part usually injured by the nose-peg. Being satisfied with the age, the dorsal and costal formation, the veterinary surgeon closely observes condition, in which the hump is a capital guide, though not an invariable one, breed making the difference. He will never overlook the matter of pregnancy, or consent to the purchase of camels so situated if in the later stage, when it is readily detected; for although the young camel can follow its dam soon after birth, transport is much more serviceable without these infantile *impedimenta*, which are a drain upon life that is required in all its force in another direction.

It is desirable to have the camels stripped of all gear or clothing; to carefully inspect the surface of the body for evidences of mange and wounds; to examine the shoulder, hump, back, and loins *with the hand*, especially if the skin be very hairy; for deep sores and callous surfaces may be found cleverly hidden under hair plucked from other parts and stuck on to deceive the unwary or the unthorough examiner. This examination will be best conducted whilst the camel is recumbent, when the soles of the feet and other parts may be seen.

It is also essential to know that a camel can lie down and easily rise with a weight on his back, and that he is not incorrigibly vicious, which latter, however, is difficult to discover under a casual observation.

Having practically tested the walk and trot, and seen that the main joints are not enlarged or anchylosed; that the callosities of the elbows, sternum, and stifles are normal; that the hind legs are not over split up, that the hocks are not knocking against or crossing each other, that the lower legs are not over-splayed, that excessive diarrhoea does not exist; see that the fore-legs can be freely and easily advanced, and that without a lateral swing, which in all probability arises from a diseased elbow chafing against the sternal pad, or *vice versa*. The feet require special observance.

Narrow bodied, rigid backed and limbed, slight framed and limbed, should be rejected.

Females, on account of temperament, are better than males, which during the rutting season fret themselves into low condition.

Castration might remedy this, and a trial has been recommended.

Particulars in the selection of the elephant need hardly be noticed, for we have nothing to do with his breeding or capture, and seldom consulted, excepting to make a *post-mortem* examination. The main points have, of course, reference to age, to bulk, condition, sight, spinal and costal formation, ability to lie down and rise under weight, to the condition of joints and feet, and freedom from those enormous subdermal excavations, with their inspissated contents and numerous openings, and which are so difficult to heal, along the dorsal and lumbar ridges.

The veterinary surgeon may not again come across transport animals until his regimental charge arrives at one or other of the railway termini, which in 1878, '79 and '80 were from 150 to 300 miles from the frontier base—distances that are now practically removed from animal traffic for military purposes by railway extension. This railway development in future wars in and beyond Afghanistan, besides effecting a vast saving of money, time, human and animal labour, must considerably limit the spread of those infections and contagious diseases which severely crippled the transport on the lines leading to the bases of operation.

In future, then, we may presume that all transport animals will be set down by rail on the frontier bases, not only fully equipped as regards gear and clothing, etc., but in a condition better fitted to begin work than if they had first of all to traverse and retrace, many times perhaps, the distances above quoted; and along which main roads of Northern India one or two veterinary surgeons were constantly engaged in exterminating Glanders and Farcy amongst horses connected with passenger traffic, curing and limiting the ravages of Foot-and-mouth Disease, suppressing Rinder-pest and Anthrax, not only amongst Government transport and slaughter cattle, which could be the more easily managed and controlled by reason of their being state property, but amongst those of hundreds of private carriers, travellers, and villagers, incessantly passing and trading along the high road, resting in infected buildings and enclosures, or halting and grazing about the camping grounds common to all, and which soon became infected with the diseases mentioned.



The gigantic services which this brief reference but inadequately conveys entail a vast amount of labour and careful organisation upon the executive veterinary officer, and a tactical manipulation that either does not obtain at all in any other country, or obtains only to a limited extent; this is owing to the prejudices entertained by the natives of Hindustan—prejudices which arise from the customs and religions of race and caste, and which Government still feels itself compelled to respect and foster, for political reasons, although inimical to the preservation of animal life, and favourable to the development, spread, and maintenance, of cattle diseases.

Except in the case of Glanders-Farcy, there is no law to authorise the destruction of incurably diseased animals, so that there is no such thing as the stamping out of Rinderpest by occision; and as we are not permitted to kill the ox we cannot cure, the longer he lives the longer is he a centre and disseminator of infection, a process which does not cease at death; for he is stripped of his hide—itself a moveable infecting agent—whilst the carcase is left to be eaten, or to decompose, and at the same time to infect.

On the common encamping grounds, and where the healthy and diseased ever mix and move thence up and down the lines leading to and from the frontier bases, the best sanitary arrangements fail to maintain a successful hold on, and control over, even the ordinary curable epizootics, such as Foot-and-Mouth Disease. The sanitary staff required would be enormous, whilst that sanctioned would be next to useless; part would be stationary, and part always on the move, all requiring comprehensive organisation, direction, and supervision; nothing, however, could be considered complete without the aid of an Act empowering destruction of cattle under special conditions.

Take a single encamping ground tenanted by the animals of four different convoys in twenty-four hours, and see how far it is practical to discover, seize, and force into isolation every suspected or diseased equine or bovine, made up of Government and hired transport; you may not be able to detain the owner of one animal, for his other two must proceed; he would infinitely prefer to drag his infected one along behind his cart till it dropped, and had to be abandoned. When the sick were detained, there was no one to tend them; if hired animals, nothing for them to eat. If they recovered, it was difficult to find the original owner, who might have been pushed into the invaded country, and so on *ad infinitum*.

*(To be continued.)*

#### WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above association was held within the Veterinary College, Glasgow, on June 1st, vice-president Mr. James Weir in the chair. The chief business of the meeting was the discussion of the following essay, delivered by Mr. T. Campbell, F.R.C.V.S., at a previous meeting.

##### PARTURIENT APOPLEXY.

MR. PRESIDENT AND GENTLEMEN,—At the request of your worthy secretary, Professor Macqueen, I again appear before you as an essayist.

I need scarcely ask for your sympathy and forbearance, when you are made aware that I have been requested to grapple with the most important sporadic disease that attacks the cow—interesting and important not only to the veterinarian, but of vast importance to stock-owners, namely, Parturient Apoplexy. Excuse me, if for brevity's sake, I depart from the usual system of description. My intention is, only to lay before you the important facts, features, or symptoms connected with the malady.

*Pathology.*—Much has been said and written regarding the pathology of Parturient Apoplexy; various authorities have different theories, and seeing

there is still a doubt regarding the nature of this disease, many veterinarians have been working with a will in order to unravel its mystifications. I think it will be well at the outset to give, in as few words as possible, some of the theories recently promulgated by the leading authorities.

1st. That it is a blood disease due to the presence of a specific element.

2nd. That it is due to encephalic anæmia.

3rd. That the primary and exciting cause is indigestion.

4th. That Thrombosis is the sole cause.

5th. The anatomical theory.

It is a well-known fact that the vascular system is more developed in the cow than in any other domestic animal, and the *rete mirabile* arrangement in the brain predisposes to congestion. The vertebral arteries enter the spinal canal more directly, and give greater impetus to the circulation in the brain (*Walley*).

6th. That it is due to a functional derangement of the ganglionic or sympathetic nerve.

7th. Professor Williams says: "That the particular congestion of the brain and its meninges is determined by the state of mental excitement which is always present at this period, and this argument is borne out by the fact that the removal of the offspring from its mother is a fruitful exciting cause of the so-called Milk Fever. That the lower animals are capable of expressing strong maternal affection is patent to all observers. Who has failed to witness the restlessness, loss of appetite, and unhappiness of many a cow deprived of her calf, and this is the fruitful source of derangement of health." Here he gives example of general paralysis in a she-goat.

I will not attempt just now to criticise the various hypotheses I have put under the several heads. We will leave this for after discussion. So after I have given my opinion regarding the pathology, will proceed to prove by symptoms and morbid anatomy that the disease is none other than a brain disease of a congestive type, and I also hope to make apparent to you all that many writers confound the causes with the effects.

I do not look on Parturient Apoplexy as a single substantive disease, but regard it as the pathological sequence of a multiplicity of different conditions.

*Firstly.*—The instinctive passions. That these passions are highly developed in the cow must be admitted by all, and in addition to the love of offspring mentioned by Williams, I would add the instinct to give suck.

It arises by the provision of nature in the maternal animal, which gives suck at the period when a young creature is about to be born, and in consequence of an unpleasant external sensation from the distention of the mamma with milk, which is the sensational stimulus of the instinct. Everything that induces this sensation in the mamma, excites the instinct to give suck; so that the cow whose mamma swells about the time she ought to give birth to the calf, and although not calved, will bellow after a strange calf, and even will allow it to suck. The instinct itself is a strong desire to empty the mamma, which is the design of nature as well as the object of the animal.

That the painful sensational stimulus changes the vital movements contranaturally, is clearly proved by the great uneasiness and considerable constitutional disturbance as seen in the cow just before the act of parturition, and it is beyond doubt that these sensational instincts have secondary depressing effects on the brain and nervous system.

*Secondly.*—We must now take into consideration the consistency or quality of the blood about the period of parturition. It is well known to physiologists that the circulating fluids contain an amount of colostrum which is abundantly secreted at the time of parturition, and when we consider, as I have previously stated, the relationship existing between the nervous system



and the secretion of milk—especially the first or colostive milk—we may well understand that if the fatty matter contained in the blood is not at once eliminated through the cells of colostrum in the mammary secretion, its excess in blood must have a sedative effect. In this manner we may account for nearly the whole of the cases coming under our observation being good milkers, that is to say, cows that not only give a large quantity of milk, but rich in quality.

On the other hand, we can account for the liability to this disease ceasing a few days after parturition, owing to one of the exciting causes being removed by the mammary gland in the lacteal secretion, which has no longer the character of a colostrum.

*Thirdly.*—The anatomical conformation of the vascular system in the cow.

*Definition.*—Cerebro-spinal hyperæmia.

*Exciting Causes.*—The act of parturition and the instinctive passions.

*Symptoms.*—The symptoms in many instances appear suddenly, the disease running its course in very few hours. A cow may be seen in perfect health, and in six hours lying perfectly comatose. In the earliest stage the cow looks rather excited, looking about for something, and occasionally bellowing, she fidgets about in the stall, and shortly may lie down quietly, but will spring to her feet on the slightest unusual noise; now if you look carefully at her you will notice the eye has a dull appearance, winking frequently, and the tears running abundantly down the cheeks, head inclined to hang a little. Shortly she commences to sway in the stall, paddle with the hind feet, stands with the hocks quite straight, spasmodic contraction of the limbs. It is now you notice the deranged functions of the nervous system. Motor and sensory nerves become impaired in their functions, and ultimately become paralysed. The sympathetic nerve is no longer capable of performing its important functions. The animal is no longer able to stand, and if she attempts to rise, generally rolls over flat on her side, with limbs extended and head back, and if left in this position for a short time, Tympanitis sets in, and if her position be not at once altered, death would be the result.

If put on her sternum, she throws her head from side to side; bellowing now has a characteristic sound, and she becomes delirious, the tears cease to flow; if she attempts to carry her head, a curved condition of the cervical vertebræ is observed, owing to the cervical muscles being no longer able to perform their work, the whole weight of the head being thrown on the ligamentum nuchæ; breathing becomes slower, accompanied by a peculiar moan. Coma is now apparent, all secretions are arrested, sensation is gone; you may pass your finger over the cornea without the animal closing the eyelid. If you examine the contents of the rectum you will find them hard, especially on the outside, inclining to be soft towards the centre, due to want of secretions and peristaltic action of the intestines, and being submitted to a temperature of 182° for hours.

In all my experience I have never seen the temperature higher than 103·5°, and this only at the very early stage. Whenever the animal is down, you will find the thermometer registers 102°, which gradually falls; I have seen it as low as 98·5° Fah., and the animal recover.

The pulse at the outset may be pretty strong, but by no means full; it very rapidly becomes small, weak, and accelerated, and as the disease advances gradually becomes almost imperceptible.

*Morbid Anatomy.*—On one occasion, a few years ago, I made a careful examination of the brain and anterior portion of the spinal cord, and the result of that examination I communicated to Professor McCall.

After removing the calvaria, the dura mater was seen to be very much distended, and at once bulged out to a higher level than the remaining part of

the cranial bones, in fact, I could not conceive how the cavity contained it. I then laid bare the spinal cord as far as the posterior part of the second cervical vertebra, and found the covering similarly distended as far back as the odontoid process of the dentata.

I now made a small incision through the dura mater, through which ran out a considerable quantity of fluid, and this fluid being to a very great extent in excess of the normal fluids, I made up my mind it was effused serum.

I removed the dura mater and found a hyperæmic condition of the pia mater, the veins seeming to be in a varicose condition, the smaller vessels being to all appearance injected. The whole substance of the brain was normal; I could neither see a trace of extravasation, or rupture of any of the blood-vessels. I attempted to break down and wash out the brain substance in order better to examine the circulatory system, but in this I was unsuccessful, owing to the engorged and weak condition of the veins.

I may here add, that a number of anatomists consider, owing to the brain being enclosed in an unyielding case, no altered condition could add to or diminish the cranial contents. This certainly is an erroneous idea. You are not to consider the cranium to be a perfect sphere like a glass globe, for we have numerous foraminæ, some of them large, for the transmission of nerves and blood-vessels through the bones of the cranium, also a complete lymphatic system, and I assert that you may have considerable cerebral effusion before death may be caused by pressure on the brain substance.

*Treatment.*—No disease in veterinary medicine exists regarding which such a diversity of opinion prevails, as to the treatment that ought to be pursued. Many veterinarians have their own formula and system of treatment.

Some may agree with the mode of treatment I now pursue, while others may differ from me; still I shall feel content if my endeavours to lay before you my experience in combating with this malady, may prove of service to the profession at large.

At the onset I will advise every veterinary surgeon not to administer sulphate of magnesia as a cathartic in Parturient Apoplexy, for my experience has been sufficient to prove beyond doubt that the sedative action of the salt rendered the cow comatose in a short time. I have also tried oil lini and croton with nux vomica, but found their action as a cathartic uncertain, and not to be relied on. Blood-letting, after frequent trials, I condemn.

I at one time adopted this mode of treatment for the purpose of diminishing the pressure on the brain, and thereby checking the congestion or effusion, but although I have frequently performed venesection at the early stage of the disease, I have always found its sedative effect great, owing to its decided debilitating effect on the heart's action.

In nine cases out of ten, when the practitioner reaches his case, the animal is down and unable to rise. His first duty ought to be to see the cow placed in a natural position on the left side, then carefully examine her. On examination if you find the tongue sensitive, the animal having still the power of using it and lower jaw, administer at once from twenty to thirty ounces of good whisky, or a pint of brandy, diluted with an equal quantity of cold water, to which add  $1\frac{1}{2}$  ounces of sulphuric ether; the ether quickens the action of the stimulant. When administering the drench, see that an assistant places his knee against the left shoulder, at the same time holding the horns, with the nose held straight to the front; you can assist deglutition by closing the mouth and raising the tongue against the roof of the mouth, by pressing the bottle against the inferior maxillary space. In half an hour administer from four to six pounds of treacle dissolved in hot water. Treacle has a mechanical as well as a physiological action, and its action is useless



unless you allow a sufficient quantity of water after its administration ; it produces thirst, and you will find an animal will drink greedily two hours after it has been given.

Now give instructions as to the general comfort of the cow ; see that she is well packed up with bundles of straw to prevent her getting flat on her side. Order her to be turned from side to side regularly every two hours ; tie up the head with a rope attached to the horns and place over a joist. Apply ice or cold water to the head. If cold water, see that it is applied every ten minutes with a piece of blanket wrung out. If your patient inclines to dash her head about, apply a check rope attached to the horns in order to prevent her striking her head against hard bodies. Do not instruct the attendant to turn the cow on her side in order to rub or draw the mammary gland, as there is no secretion there, and you cannot increase it by stimulation until you have the brain relieved of its hyperæmic condition. Lubricate your hand and exhaust the rectum of its contents, and it may be advisable to throw up a warm water injection. If the animal is not comatose, in four hours give twenty ounces of whisky, and continue doing so every six hours until you see her recovering. In my experience two doses are sufficient, as recovery takes place in from twelve to twenty-four hours.

In some cases, when you reach your patient, she is lying perfectly comatose. Do not lose hope, as I have seen far over twenty cases recover, although in this condition when I arrived. When I get a case on my arrival comatose, I at once inject into the muscles of the hip, with an aspirator, about  $1\frac{1}{2}$  ounces of rectified ether. I now take an ordinary leather probang, pass it into the stomach ; immediately it is passed I pass my hand into the mouth, holding the probang against the roof of the mouth in order to keep the larynx clear, so that the breathing be not interrupted. I order an assistant to put a funnel in the end of the probang, and pour down a bottle of spirits. In an hour I will again pass it, and pour down about six pounds of treacle. You need not fear getting your hand injured, as the animal cannot close her jaw. In a case like this do not allow an attendant to give medicine ; if you cannot remain with the case, see it as soon as possible. I have seen a cow lying more dead than alive, and in eight hours on her feet and feeding.

When an animal is lying unconscious, the temperature goes down very rapidly, and it is an important principle to supply artificial heat ; this I do in the following manner :—

Take an ordinary waterproof rug, throw it over the animal with the lining next the body, then take a blanket wrung out of hot water, place it over the waterproof rug, cover it over with a sheep-skin or another waterproof, continue this until the temperature commences to rise.

At this juncture I may draw your attention to a most admirable article written in the VETERINARY JOURNAL by Mr. Cox, A.V.D., on Milk Fever, an article not only creditable to the writer, but instructive to the profession ; but while admiring the manner in which he attempted to grapple with this important malady, I feel I cannot entertain either his pathology or treatment, and knowing he is not here, I will not introduce the important feature in his paper, but will simply draw your attention to a form of treatment he recommends, viz :—"The pack," which means you are to immerse a cotton sheet in cold water and place it on the animal, over which you are to place two or three rugs, or more if necessary, the whole to be enveloped with mackintosh sheeting ; he says, the sequel will be that in a short time the animal will be teeming with perspiration.

It appears to me that Mr. Cox is treating this disease as a Fever, and differing very much from his pathology when he says it is simply thrombosis. Thrombosis has no relation to Fever, and it must be obvious to all present that in Parturient Apoplexy notably, are absent all the important

phenomena with which Fever is associated. If we had in this malady a temperature up to  $106^{\circ}$  or  $108^{\circ}$  Fahr., I would recommend his treatment, but such is not the case, and when you have a low temperature, do not depend on a reaction to raise it, especially when all important functions are paralysed.

When recovery is about to take place, the first thing observed is winking of the eyelids, sighing, and gentle movements of the tail, the animal attempts to support itself on its sternum, ears erect, carrying the head, the curved condition of the neck becomes absent, heart's action stronger, voids a little fæces, and voluntary micturition.

In the majority of cases no treatment is required after convalescence. If the stomach is weak, give citrate of iron and quinine, attend particularly to the diet, avoid giving sour mashes, rather order a little green food, such as cabbage, clover, or fresh turnip.

You will see, gentlemen, that I object to the term Apoplexy as applied to this disease, as the term may mean rupture of a blood-vessel, hæmorrhage, or extravasation, which I hold does not exist, except as an unfavourable termination; if such a condition did exist it would be impossible to have such rapid recoveries.

Although I have by no means exhausted my subject, I will conclude, hoping a useful discussion may follow.

A long and interesting discussion followed, in which most of the members participated, and although many valuable facts and opinions were elicited, they were insufficient to produce unanimity regarding this perplexing disease.

Mr. WEIR related a case of impaction of the frontal sinus, where absorption and thinning of the bone had occurred to such an extent as to allow an exit to the contained matter. Recovery afterwards took place.

HENRY SWEEDLEY, *Secretary.*

#### SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE quarterly meeting of the Society was held on the 25th May, in the London Hotel, Edinburgh, Mr. Burnett, President, in the chair. There was a fair attendance of members.

The minutes of the previous meeting were read and confirmed.

The SECRETARY called attention to an omission which had taken place in the election of office-bearers at the annual meeting, viz., the non-election of a Treasurer.

As the two offices of Secretary and Treasurer had hitherto been held by one and the same gentleman, Professor LEWIS proposed that Mr. A. Baird be elected Treasurer. Seconded by Mr. HUTTON and agreed to.

The SECRETARY read a letter from Mr. Rutherford anent his resignation, and in reply to one which the Secretary had been instructed to write to Mr. Rutherford, stating that the desire of the members was that he should withdraw his resignation and return to the Society. The first letter named stated that Mr. Rutherford could not see his way to return to the Society.

After remarks by several members on the subject of Mr. Rutherford's resignation, Mr. CUNNINGHAM ultimately proposed that Mr. Rutherford's letter of resignation be allowed to remain on the table, in the hope that Mr. Rutherford might some day see fit to change his mind and return to the Society. This was seconded by Professor LEWIS and carried.

A letter was submitted to the Society by the Royal Counties Veterinary Medical Association, containing a copy of a resolution adopted at their meeting of 18th February, viz.: "That in the opinion of this Association it is absolutely necessary for the Council of the Royal College of Veterinary Surgeons to protect their Examiners from such violence and insult as they were subjected



to in Edinburgh, and that this Association desires to pass a vote of confidence in the existing Board of Examiners." It was agreed to allow the full discussion of this letter to lie over until next meeting.

The SECRETARY read a letter which the President had received from Messrs. Moore and Co., Stained Glass and Mural Decorators, London, intimating that they were filling in several windows of the Board Room of the Royal College of Veterinary Surgeons, Red Lion-square, with painted glass. They desired to know if the Association wished to utilise one of the vacant windows—the price to be from £50 to £60. It was unanimously agreed that the funds of the Association would not admit of this expenditure.

Mr. CUNNINGHAM gave notice that at the next meeting he would draw the attention of the members of the Society to a letter in the *North British Agriculturist* of May 2nd, 1887, headed "Differences in the Veterinary Profession," and signed "J. M'Fadyean, Royal (Dick's) Veterinary College, 28th February, 1887," and move:

"I. That Professor M'Fadyean be requested to retire from the Scottish Metropolitan Veterinary Medical Society;" and

"II. That the representative of the *North British Agriculturist* newspaper be excluded from the meetings of this Association."

In the discussion which followed the "tabling" of Mr. Cunningham's notices, Professor LEWIS proposed that Professor M'Fadyean's letter to the *North British Agriculturist* be read by the Secretary to the members present; seconded by Mr. BORTHWICK. The letter was then read by the Secretary, and runs as follows:—

"Sir,—I hope you will allow me to say, through the medium of your widely-read paper, what, by an abuse of power on the part of the chairman, I was prevented from saying at the recent meeting of the Scottish Metropolitan Veterinary Medical Association. At that meeting there was read a letter from Mr. Rutherford, saying that, owing to certain offensive personal remarks having been made with reference to him at a previous meeting, he could not, with any respect to himself, remain a member of the Society. As soon as this letter was read, three members of the Society jumped up, puppet-like, in succession, and, under cover of a pretended anxiety for the propriety of debate, made a venomous attack on a fellow-member—an attack which appeared to me not only venomous, but cowardly, since the object of it was not at the moment present. To enable any one to judge whether the indignation of these gentlemen was genuine, and warranted by the remarks referred to, or merely assumed for use as a peg on which to hang their own spiteful attack, it will be sufficient to quote the observation that was interpreted by them as being so offensive. At the previous meeting Mr. Rutherford attacked, with great acerbity, Professor Walley in his official capacity of Veterinary Adviser to the Local Authority of the City of Edinburgh, preferring against him among other charges, that of cruelty. Professor Walley, in replying to this attack, said that he was at a loss to account for the personal enmity which, in his opinion, alone could account for Mr. Rutherford's attitude, and declared that he himself had never done anything to justify the apparent ill-feeling, in proof of which he instanced that he had supported Mr. Rutherford when he was a candidate for the Secretaryship of the Examining Board, and that he had again supported him when a proposal was made to increase the emoluments of that office. I challenge any one who was present at the meeting to deny that this was the sum-total of Professor Walley's remarks on that occasion, in so far as they could be said to have a personal turn; and, I ask, was I not justified in saying at last Wednesday's meeting that it was a farce for any one to assert that these remarks, although they may have been irrelevant, were at all offensive, or that there was anything in them to make it impossible for Mr. Rutherford, with any respect to

himself, to remain a member of the Society? I do not hesitate say that nothing so discreditable has ever occurred in the history of the Society as this hypocritical and spiteful attempt to injure a fellow-member on the part of a clique whose mouths are generally shut in any debate unless personalities can be imported into it. It was to mark my own detestation of this conduct, and of the ill-concealed delight of the chairman while his friends were mud-throwing at his rival teacher, that I moved the acceptance of Mr. Rutherford's resignation.—I am, etc.,

J. M'FADYEAN.

"Royal (Dick's) Veterinary College,  
"28th February, 1887."

Professor M'FADYEAN next read a very interesting and carefully prepared paper on "Azoturia" as follows:—

MR. PRESIDENT AND GENTLEMEN,—It will be in the recollection of those members who were present at the last meeting of our Society, that I then made a few remarks bearing upon the disease generally known in this country by the term "Azoturia." A very short but interesting discussion ensued, in the course of which it was made manifest that not only were we without any rational theory of the pathology of the disease, but that our knowledge had hardly reached the stage when we might profitably frame a theory of its pathology, since it appeared that a wide diversity of opinion prevailed regarding certain points that ought to be settled before we proceed to formulate any hypothesis concerning the etiology of the disease. Our President, impressed, I presume, with the interest of the subject and the inadequacy of the discussion that it had received (due mainly, I have no doubt, to its having been introduced without notice), suggested that I might reintroduce the subject at our next meeting. It affords me much pleasure to do so to-day, but I regret that in the circular convening the meeting it should have been stated that I was to read a *paper* on this particular subject. I mean that the use of the word "paper" may have led members to expect something much more elaborate than the somewhat disjointed remarks that I am now going to make.

1st. Circumstances in which the disease manifests itself. A point upon which there is absolute unanimity is, that the disease has never been observed in an animal that has, immediately prior to the attack, been performing an ordinary amount of labour, or been moderately exercised. A period of rest in the stable is a constant antecedent of the attack. On the other hand, there is a diversity of opinion as to whether some amount of muscular exertion invariably precedes an attack. Professor Williams says, "I never met with a case that was attacked in the stable prior to some amount of exercise. It seems necessary that some degree of muscular exertion be performed." On the other hand, Professor Robertson says, "At one time, judging from what I had observed, I was of the opinion that this operation of working, following the rest and repletion, was necessary to induce the toxic condition. Further experience, however, has satisfied me that such is not imperative—that animals may become affected in this manner when remaining in the stable, provided the extra supply of nutriment of this particular kind is kept up." My own experience of the disease does not enable me to corroborate this statement by Professor Robertson. That, however, is probably ascribable to my much more limited experience of the disease. In all of the cases that have come under my observation, the attack came on after the animal was brought out of the stable. In some cases the amount of muscular exertion that immediately preceded the attack was almost inconsiderable. In one case the horse had walked leisurely from the Tramway Company's stables in Leith Walk to the Veterinary College, where it was suddenly attacked. Professor Robertson also says that he has seen an animal attacked after it



had walked only a few hundred yards. In this connection it appears to me worthy of inquiry whether, admitting the fact that the attack generally comes on after the animal is taken out of the stable, the causal connection, if any exist, might not be found in the change of temperature to which the animal is subjected, rather than to the muscular exertion involved in walking, it may be, only a few hundred yards. Light might be thrown on this point by ascertaining whether the disease is more common in winter or at other seasons.

As regards the quality of the food consumed by the animal prior to the attack, there seems to be a general opinion that it is most commonly of a higher nitrogenous character. Professor Robertson says that he has observed a large proportion of cases among farm horses fed on ripe tares. As the ordinary stable diet of horses contains a considerable proportion of proteids, the general statement is likely to be true. It is certain, however, that the diet prior to the attack is often found to have been of an ordinary character.

The disease is not peculiar to either sex. The majority of the cases that I have seen were in geldings, but that may be accounted for by the fact that in Edinburgh there is a much smaller proportion of mares than of geldings, especially among animals used for draught purposes.

*Symptoms.*—About the chief of these there is the most complete agreement among all those who have described the disease. The animal is suddenly struck with great lameness or inability affecting the hind quarter. In severe cases the animal appears to suffer great pain, perspiration is profuse, pulse and respiration are accelerated, and the temperature is elevated two or three degrees. The animal falls or lies down, and is unable to get up again. There is marked rigidity of the lumbar and gluteal muscles. Soon after the attack the animal may urinate, and then, or after passing the catheter, the urine is observed to be altered in colour. Speaking of the examination of the urine Professor Williams says:—"In every case its specific gravity is much increased, 1·185 or higher. It is highest during the first few hours after attack, as it often becomes lighter in colour, even in those cases which succumb after the first day or two. Boiled, the urine gives no reaction, except that ammoniacal gas is emitted. Tested with nitric acid, it almost becomes solid, but the solidity is not due to coagulation of albumen, but to precipitation of crystals of nitrate of urea in great abundance. These crystals appear as mice-like scales of a brown colour and fall to the bottom of the glass. At first the addition of the acid causes much effervescence, the urine being strongly alkaline, containing ammonium carbonate." Then follows the description of a method by which urea may be demonstrated with blood-serum. Elsewhere Professor Williams says that the blood is "dark coloured, having an ammoniacal smell." Professor Robertson says of the urine:—"In density it is generally high. The colour has often been regarded as due to blood or the colouring matter of blood. Examination with the microscope, however, fails to detect the existence of either entire or broken-up blood-globules. The solidification which the urine undergoes on the addition of nitric acid, which has often been deemed indicative of the existence of albumen, is so far a mistake, being due evidently to the formation in excess of nitrate of urea, and the absence of albumen is further confirmed by the non-coagulation of the liquid on the application of heat. If albumen does exist it is certainly not in the form generally met with, either in the blood or urine." Thereafter Professor Robertson describes a method by which the crystals of nitrate of urea may be demonstrated in the urine, viz., by adding to concentrated urine an equal quantity of pure nitric acid. This method, however, will demonstrate urea in any sample of normal urine. I will now give my own observations regarding the character of the urine in this disease. For this purpose I may take

a typical case which occurred in the spring of last year, and which, through the kindness of Mr. James Player, veterinary surgeon, of this city, I had an opportunity of investigating. This animal was attacked on the afternoon of the 25th March, and shortly after her condition was recognised the catheter was passed and the urine drawn off. It had the colour of black coffee or porter, and a specific gravity of 1.035. It contained a large quantity of albumen, and 11.05 grains of urea to the ounce. The urine was again drawn off on the following morning at 5 a.m. This sample was much lighter in colour and less opaque than that first drawn off, having a tint like ale. It contained 11.9 grains of urea per ounce, and it was still albuminous. A third sample of urine was drawn off at 11 a.m. on the 26th (about twenty hours after the attack). This sample, which was very turbid, of a clay-mud colour with a faint tinge of red, was not analysed. The reaction of all the samples was alkaline, but none of them was ammoniacal. On the contrary, the odour was of a sweetish, fragrant character. Of the microscopical characters of the urine, I will speak later. Here, however, it is proper to notice that, unless some mistake was made in the examination and analysis, the urine in this case had characters diametrically opposed to those which are stated by Professor Williams and Professor Robertson to be the specific characters of the urine in this disease. In defence of my own observation, I am going to criticise what I have quoted from these authorities on this head.

1st. Concerning the ammoniacal odour of the urine, I may observe that there appears to me to be a slight discrepancy in the passage that I have quoted from Professor Williams. He says that the urine is to be examined as soon as possible after it has been obtained from the animal, as it quickly becomes ammoniacal. Three sentences further on, he says, that when the urine is boiled, ammoniacal gas is emitted. The first of these sentences appears to imply that the urine only *becomes* ammoniacal after it has been kept, while the second sentence that I have just quoted would lead us to infer that the urine is ammoniacal from the outset, that is, unless we assume that Professor Williams neglected his own advice to examine the urine while fresh. I was in doubt about this until our last meeting, but Professor Williams then stated distinctly that the urine was ammoniacal when first drawn off.

Now, I believe it is a fact that at ordinary temperatures and pressures urine will never turn ammoniacal if the access of atmospheric germs be excluded. If the urine be drawn off from a healthy bladder, with a healthy urethra, and with precautions that exclude the possibility of insemination with organisms, then the urea will persist as such for an indefinite time. There are, however, one or more species of micro-organisms, which, by their growth in urine, act as ferments, and promote the decomposition of urea and the formation of carbonate of ammonia, just as the yeast-fungus sets up the alcoholic fermentation in saccharine solutions. Now, I do not say that the urine in Azoturia is never ammoniacal at the time it is voided or drawn off. What I do state is that, in my experience—and reasoning supports me—the *first* sample of urine is never ammoniacal. If, however, in a debilitated subject, and with urine of morbid characters, particularly albuminous or bloody urine, a dirty catheter be passed, nothing is more likely than that this ammoniacal fermentation of the urea will ensue in the bladder; for a dirty catheter is almost certain to contain some of the specific germs of this fermentation. At our last meeting Mr. Spreull said that he could corroborate Professor Williams regarding the ammoniacal character of the urine, and referred to a particular case of his own; but, when questioned by me, he admitted that this character did not belong to the first sample of urine drawn off. Now, I wish to guard myself against being dogmatic, or denying the possibility of a thing because I have not had experience of it. But I do say it is remark-



able that the urine was not ammoniacal in any of the cases examined by me when first drawn off, while in the experience of Professor Williams that appears to have been a constant character. If further research should show that we are both right, it will open up an inquiry as to what other causes, besides those at present known to chemists and physiologists, there may be of the ammoniacal decomposition of urea.

Then, with regard to the specific gravity, Professor Williams says in every case it is much increased—1·185, or higher. That certainly is an error, for in none of my cases did the specific gravity exceed 1·039.

Coming next to the question of albumen being present or absent, it is a singular fact that in not one of my cases was it absent; while in Professor Williams's and Professor Robertson's cases it was altogether absent, or present only exceptionally. Professor Williams says, as already quoted:—"The urine when boiled gives no reaction, save that ammoniacal gas is emitted." I think I may take it that Professor Williams means by this that albumen is not coagulated. That, however, does not by any means prove that albumen was absent; for with *alkaline* urine no deposit may be formed on boiling, even though albumen is present. In all of my cases, by the use of reliable tests, it has been easy to demonstrate the presence of albumen.

But the most extraordinary disagreement between the results of the analyses by Professor Williams and Professor Robertson, and those obtained in my cases, is in connection with the proportion of urea present. These authorities adopt the presence of urea in great excess as a constant and diagnostic character of the urine in this affection. Unfortunately, I do not know what either of these authorities regard as an excess of urea, and when at our last meeting I put this very pertinent question to Professor Williams, he replied that he declined to be cross-examined by me. Both of these authorities state that the urea is so abundant that the addition of nitric acid produces a most abundant precipitation of nitrate of urea. Professor Williams stating that urine is thereby almost rendered solid. For the analysis of the urine in the cases examined by me, I am indebted to my friend and colleague, Dr. A. P. Aitken. In each case the amount of urea present was determined by the hypo-bromide of sodium process. The samples analysed were taken at various intervals after the attack, some being the first samples drawn off, and others taken during the second day. The quantity of urea excreted during health is very variable, and fluctuates chiefly according to the amount and quality of the diet, while it is practically independent of the amount of muscular exertion put forth by the animal. Probably about thirteen grains per ounce might be taken as the average, but after a full meal rich in proteids, the amount would likely be considerably above that.

In taking leave of this part of the subject, I wish it to be distinctly understood that I do not mean to commit myself to the opinion that the urea is never notably increased in this disease, or that it was not notably increased in all of the cases examined by Professor Williams. At the same time I trust that he and those who agree with him on this point will begin to doubt that any very marked increase is a constant character. I hope they will have an analysis made of the next case encountered, and that some more accurate and reliable method will be employed than the crude one of adding nitric acid. Furthermore, I hope that the result of any further investigations will be made public, whatever view they may be confirmatory of. I intend to pursue my own investigation of the disease on every opportunity, and whenever I meet a case in which the characters of the urine are markedly different from those I have met with in previous cases, I will promptly publish an account of it. In this paper I wish to avoid being drawn into any speculations as to the *rationale* of the affection, but I may say that I can conceive it possible, under

one view of its pathology, that in some cases the urea might be increased in amount, and little albumen present, and that in other cases the proportion of urea might not be greatly altered, while there might be marked albuminuria.

The amount of urine secreted during the twenty-four hours after the attack is, in my experience, always greatly diminished.

The altered colour of the urine, in cases where it is dark, is due to granular pigment, which is very easily demonstrated under a moderate power of the microscope. I have already mentioned that in one case the urine, twenty-four hours after the attack, was turbid and clay-mud coloured. In a case recorded as early as the year 1836, and quoted by Professor Robertson, a sample of urine drawn off is described as of the colour of whey. The peculiar tint of these samples appears to me to be due to suspended epithelium shed from the straight tubes, and possibly also from the pelvis of the kidney. This occurs in great amount, and if the pelvis of the kidney be carefully opened after death, the same peculiar material will be found there. Moreover, by gently squeezing the kidney substance, the grey-coloured material may be made to exude from the orifices of the tubules on the renal crest. By staining a little of this material on a glass slide, great quantities of epithelial cells, with deeply staining nuclei, can be made out.

*Post-mortem Examination.*—The following are my notes of a case killed at the point of death about twenty-eight hours after the attack. The intestines and peritoneum were healthy. The intestines, and notably the small gut, and the floating colon, were much contracted. There was no venous engorgement of the intestines, and little flatus in them. The stomach was healthy. The spleen was enlarged to half above its normal, and very firm, cutting almost like liver. The liver was deeply congested, the central zone of each lobule being filled with blood, and the outer zone pale. The lungs were congested, and apparently proceeding towards consolidation. The heart was healthy, except for small dark sub-epicardial hæmorrhages near the ventricular furrows. Both kidneys were considerably enlarged, weighing thirty-one ounces each. The large renal vessels were healthy and free from clots or thrombi. The capsule of the kidney was easily stripped off, showing very prominent stellate veins. The pelvis of the kidney contained mud-coloured glairy matter, similar to the urine last drawn off during life. On section the Malpighian bodies were seen to be remarkably prominent, and the straight veins of the medulla were engorged, as were also the veins of the renal crest. The spinal cord in the lumbar region was congested, the veins of the pia mater being full and tortuous. There appeared to be an excess of cerebro-spinal fluid. The anterior half of the cord appeared healthy. The muscular tissue of the loins and gluteal regions appeared normal.

*Microscopical Appearances.*—In the liver, beyond marked congestion of the central zone of the lobules, nothing abnormal is to be noted in most cases. In the kidney the glomeruli completely fill up their capsules, and the glomerular vessels are remarkably full and tortuous. The intertubular capillaries, especially in the outer part of the cortex, are in some cases also distended with blood. The large veins of the medulla are always congested. The epithelium is for the most part healthy, but that of the straight tubules appears in parts to be undergoing a kind of dropsical degeneration, and is easily detached. Streaks and little masses of granular pigment lie in some of the convoluted tubules, at places appearing to distend the lumen of the tubule and compress its epithelium.

Important changes can be made out in the muscular fibres, even when there is but little alteration in the microscopical characters of the muscles. In one case recently examined by me, in a section prepared from the lumbar



muscles, about every third fibre was partially disorganised. In some the striation was merely obscured, in others there was a condition resembling cloudy swelling, and in others the sarcous substance was completely broken up and coagulated in structureless lumps.

In concluding, I feel constrained to apologise for the disjointed and fragmentary character of these notes. I hope, however, that they may suffice to excite a discussion, and that diversity of opinion may but stimulate all of us to avail ourselves of every opportunity for further investigation into what is yet, as regards its true nature and causation, a very obscure disease.

A short discussion followed, after which a vote of thanks was awarded to Professor MacFadyean for his able paper.

A vote of thanks to the President was proposed by Mr. CASSELLS and seconded by Mr. BARCLAY.

This concluded the business of the meeting.

ARCHD. BAIRD, *Hon. Sec.*

## Obituary.

THE Secretary of the Royal College of Veterinary Surgeons reports the following deaths:—N. Leigh, M.R.C.V.S., Bristol, graduated 1835; G.J. Brooker, M.R.C.V.S., Twyford, Berks, graduated 1877; H. Webb, M.R.C.V.S., Great Stamford, Essex, graduated 1851.

Mr. Mannington, M.R.C.V.S., of Brighton, who was well known in Turf circles, died quite suddenly at the commencement of July.

## Notes and News.

OVERSTOCKING DAIRY COWS.—At Newport borough police-court recently, John Mullins, William Henry Watkins, and Herbert Watkins, cattle dealers, were summoned for causing cows to be ill-treated. The offence consisted in allowing the animals to become overstocked with milk, and muzzling the calves so as to prevent them taking sustenance. This was done to improve their appearance at the cattle market. Mullins told the bench he should be very glad to see the practice done away with altogether; and William Watkins admitted to the police officer, "We know it is cruelty, but we cannot help it. We cannot sell them if we do not stock them." *Mr. Sheaf, M.R.C.V.S., called for the defendant Mullins, asserted that no cruelty at all attached to the practice. It was, besides, the custom of the country.*—The Mayor: "It may be a custom, but it is cruelty, and a disgrace to any civilised country. I have seen poor cows standing, not for six, but for twenty-four hours distended in the way spoken of, and I am surprised that our veterinary surgeons do not endeavour to stop the practice. I am glad to see Mr. Greenwell, the inspector for the Prevention of Cruelty to Animals, here, and I hope he will come here oftener, and bring as many cases as he can detect. The defendants will be fined 10s. each, and we hope it will be a caution to them."

BERLIN VETERINARY UNIVERSITY.—The Veterinary College of Berlin was on June 29th officially proclaimed by Dr. Lucius, the Minister of Agriculture, to have been raised to the rank of a Hochschule or University. The first rector is our esteemed colleague, Professor Müller, to whom we tender our hearty congratulations on the well-deserved honour conferred upon him.

TRICHINÆ IN PORK.—In the Eulenberg *Quarterly Journal of Forensic Medicine*, official returns are given of the examination of pigs for Trichinæ

and Measles in Prussia during the year 1885. According to this, no less than 4,421,208 pigs were examined, and of these 2,387 were found "trichinous," so that, for every 1,852 pigs, there was one trichinous. The number of communities in which trichinous pigs were found amounted to 849, and 13,653 pigs were suffering from Measles. It is also stated that 101 American sides of bacon and bacon preparations were found to contain *Trichinæ*. These investigations were made by 21,117 official meat inspectors.

EFFECT OF RECENT LEGISLATION ON THE CONTAGIOUS DISEASES OF ANIMALS.—In his annual report to the Committee of the Brown Institution for the year 1886, Mr. Victor Horsley says:—The facts made known by the admission of cases to the hospital show some striking results of recent legislation in the direction of preventing disease. The most important is the remarkable diminution in the cases of Rabies and Distemper. In the autumn of 1884 Rabies, which had been steadily increasing for the previous two years, suddenly reached an epidemic height.

Note.—The following columns of figures show the details upon which the above generalisations are founded:—

	Years.					
	1881.	1882.	1883.	1884.	1885.	1886.
No. of cases of Rabies admitted into the Institution.	5	8	9	19	18	6
No. of deaths from Hydrophobia in London.	5	4	8	9	26	9
No. of deaths from Hydrophobia in Extra-Metropolitan area in counties of Middlesex, Hertford, Surrey, Kent,	2	5	5	2	12	Not yet obtainable.
Total No. of deaths from Hydrophobia in London and London home counties.	7	9	13	11	38	Do.
Total No. of deaths from Hydrophobia in England and Wales.	34	28	34	29	60	Do.

The average number of deaths per annum in England and Wales during the last sixteen years was 45, and this high rate was practically attained (44·5) in 1884-1885, the average population for the sixteen years being twenty-eight millions. In Prussia the population is now just twenty-eight millions, but in contrast to the English and Welsh total of 89 deaths from Hydrophobia for 1884-1885, there have been only two deaths in Prussia since July, 1884. It perhaps need hardly be added that in Prussia, which country is constantly being invaded by rabid animals from Russia (*vide* the "Archiv für Wissenschaftliche und Praktische Thierheilkunde," Band X., p. 21, Berlin 1884), the police regulations are well carried out.

It is interesting to note that an increase of Rabies occurred in Lyons contemporaneously to that in London, thus:—

	1881.	1882.	1883.	1884.	1885.	1886.
No. of cases of Rabies admitted into the Lyons Veterinary School.*	70	26	46	62	90	79

I then requested Mr. Batt to publicly notify this fact in a letter to the *Times*.

\* M. Th. Violet, Statistique des cas de de rage canine et féline constatés à l'Ecole Vétérinaire de Lyon de 1881 à 1886. "Journal de Médecine Vétérinaire et de Zootechnie," Lyon, Feb., 1887, p, 69.



The only effect of this notice was to evoke paragraphs in other papers to the effect that some persons were endeavouring to raise a panic. However, of course, when the disease had caused twenty-six deaths from Hydrophobia in London alone during the following year, 1885, the panic came, and the tardy realisation by the public of the danger led to the publication of the police muzzling edict of November, 1885. This edict, although through unfortunate misinterpretation of its wording, at first imperfectly carried out, soon produced a remarkable diminution in the cases of Rabies, and consequently of Hydrophobia in man (the London deaths in 1886 being nine, against twenty-six for 1885), until in December last no case of Rabies was reported in London. Further legislation against Rabies has also been achieved. Rabies is now scheduled by the Privy Council, and it is not too much to hope that in time its complete eradication will be effected. The statistics of the Institution also show an unforeseen proof of the value of the police regulation, especially with regard to the immediate destruction of ownerless dogs. Distemper, the most contagious disease among the carnivora, and not only very frequently a fatal malady, but also one which produces the most lamentable sequelæ—*e.g.*, blindness, chorea, etc.—has diminished by more than one-third of what it was in 1885. The removal from the streets of the wretched curs whose existence is infinite misery to themselves and danger to men and animals, by reducing so effectually the diseases Rabies and Distemper, cannot but commend itself to all.

CONTAGIOUS PLEURO-PNEUMONIA.—The Journal of the National Agricultural Society of Victoria, in an Editorial article on this disease, remarks :—“Opinions differ with regard to the infectious or contagious nature of Pleuropneumonia, but we notice that those who question its infectious nature always take very good care that no animal suffering from the disease is admitted to their herds—if they are aware of it. There is also a difference of opinion between professional men—veterinary surgeons—and practical men—stockowners—as to whether an animal that has had Pleuro and has recovered, is likely afterwards to be a source of infection to others. The leading veterinary surgeons (who speak theoretically) maintain that it is, while the practical men argue that it is not. During an experience extending over a number of years we have never seen an animal which has recovered from the disease which has afterwards communicated it to others. Sometimes an animal which is apparently recovering, and is almost well, will have a relapse, during which it is, of course, a source of infection ; but after the disease has run its course—whatever may be the theory of the professional men with regard to matter becoming encysted in the lungs and retaining its vitality—in actual experience there is no danger of infection from a recovered beast. In proof of this we remember a milking cow which had a terrible attack of the disease, lasting about two months, during a fortnight of which she neither ate nor drank—her recovery being looked on as almost a miracle—which afterwards bred calves, and ran for years amongst all kinds of cattle, yet never infected a single beast. Only quite recently we were reminded by the man who broke them in of several Queensland bullocks which were bought as stores, which had the disease and recovered, and which were afterwards worked for years, and were then sold in Melbourne fat, without ever having infected others. Also we have again and again turned bullocks, which had been isolated while they had the disease, back into the herd after they had recovered, when they have run with others till fat, sometimes being kept over for a second year and mixed with fresh mobs, without ever once having known them to be a source of infection to others. Surely the ‘noes’ have it, as Mr. Speaker would say. As we see no reason why Pleuropneumonia should be, like the poor, always with us—or like Tuberculosis, which our Chief Inspector of Stock said in his evidence before the Tuber-

culosis Board would never be eradicated from our herds till the end of the world, we hope that in course of time a better appreciation of the efficacy of inoculation may lead to the stamping out of the disease."

## Correspondence.

### DISLOCATION.

SIR,—Since your publication of the letter by Noble Smith, F.R.C.S., Ed., on the rational reduction of dislocation of the shoulder in the horse, it is surprising, nay, alarming, how frequently this untoward accident has occurred to all sorts and kinds of horses, from the cheapest screw to the most valuable thoroughbred. But the ingenious—indeed miraculous—way in which some people who, to put it mildly, seem to know very little of the anatomy and strength of the horse, have reduced these dislocations, is worthy of a page in the records of surgery. Besides, a sporting contemporary has said, that the veterinary profession must be composed of a very easy-going lot; and I am afraid that the title would be deserved if such incidents as the following were to pass without comment from us.

Dislocation of shoulder while out hunting; reduced at once, the horse standing, two men holding the injured limb, the third forcing the horse back by means of a tight curb.

Secondly, a well-known racehorse is put right in an absurdly easy manner by simple taxis.

The next is again done while hunting, and is successfully replaced after the horse has walked home; procedure in this case not mentioned.

And lastly, *mirabile dictu*, the complete cure of dislocation of the hip.

Granting, for the sake of argument, that dislocation of the hip can occur, how is it possible for the horse and limb to be immediately all right after rupturing the ligaments, the presence of which seems to be unknown to those who tell such "wondrous tales"?

Hoping to be excused from occupying so much of your valuable space, only doing so that the honour of the profession may be upheld.

Newbury, 12th July.

J. H. WILSON, M.R.C.V.S.

### EXAMINERS.

SIR,—Under this heading in your last issue, there is a charge brought against Mr. Robinson, which I cannot help denying. As a candidate for examination, it was my lot to encounter Mr. Robinson as an Examiner, both on anatomy and comparative anatomy for my Class B examination, and at the examination for the diploma, at the college in the morning, and in conjunction with Mr. Mayer at night, at Red Lion Square. On each occasion Mr. Robinson treated me as a gentleman, and his questions were quite fair.

I will relate a fact which occurred in the evening at Red Lion Square. It was at the cattle pathology table; Messrs. Mayer and Robinson were the examiners. I was first questioned by Mr. Mayer, and had I not been posted up with answers to some of his pet questions about "working oxen," etc., I very much doubt whether my name would have been amongst the successful candidates. One of his questions was somewhat as follows:—"What symptoms would a bullock show if it were confined in a closed shed, without sufficient fresh air?" I told Mr. Mayer all the symptoms I knew, and all I could imagine at the time, but he continued pressing me for more. Having exhausted both my knowledge and imagination on the subject, and beginning to feel that I was getting into the same condition as the unfortunate bullock, I was about giving up in despair, when I looked at Mr. Robinson, and lo! instead of sneering sarcastically, he was putting his tongue out. Here was



the symptom I had omitted, and which Mr. Mayer evidently thought so essential.

I at once told Mr. Mayer that the animal would put its tongue out. "Quite so," he said; "why couldn't you say so before?" After this, without giving Mr. Mayer another opportunity, Mr. Robinson questioned me until the bell rang.

Now, sir, I would like to ask, did this look like a desire to reject a student? Was it not rather a proof of good will?

When the examination was over, I remember well that more than one *successful* candidate spoke well of Mr. Robinson.

Huntingdon.

JAMES SMITH, M.R.C.V.S.

### COW DISEASE AND SCARLATINA.

MR. EDITOR,—You have called the attention of our profession in this month's Journal to the statement made by Dr. Klein, *that Human Scarlatina is derived from the cow*. I have therefore read carefully the doctor's report in last month's Journal on his investigations and experiments, viz., the results of inoculating calves, and have come to the conclusion that the disease he reports upon as having taken place at the Hendon Farm, is not a disease very well known to our profession, for he notes the appearance thus: "The *suspected* cows from the *Hendon* Farm, that had been made the objects of special study, showed, besides a skin disease, consisting in ulcers on the udder and teats, and in sores, and scurfy patches, and loss of hair in different parts of the skin, also a general disease of the viscera, notably, the lungs, liver, spleen, and kidney." Possibly other veterinary surgeons may have seen some disease of this kind, but I must confess that I never had a cow with such extensive diseased ramifications as this. No wonder that the doctor obtains the origin of some disease; the wonder is that he did not get the germs of almost every disease from the blood of those diseased organs. And now that we have got from the doctor his *post-mortem* result of this disease, surely we are entitled to ask him to give it a name; for if veterinary surgeons are to be of service to the public in preventing the spread of Scarlatina in the human subject when derived from the cow, we must know the name of the disease that produces it. With regard to the symptoms of an animal so affected, one could almost fancy what the symptoms of a cow that had one organ involved might be; but to be affected in five special organs at one and the same time must produce very much constitutional disturbance.

Fortunately for our profession, and the doctor also, we have a valuable answer to that question in the report of Professor Axe. It is quite a treat to read a reporter's statements when clear and intelligible. And what is the answer? The professor says he made an examination of the cattle at Hendon Farm, and he found it to be an eruptive disease, called Cow-pox, affecting the udder and teats, and free from any constitutional disturbance. Either the one or the other must have made some gross mistakes, for it is a well-established fact that neither the lung, spleen, nor liver are in the smallest degree affected in Cow-pox; the cow, as the professor says, while she has it eats and milks, and does everything that a healthy cow does.

Are we to believe, then, that the doctor, in order to make his case appear more apparent, and to connect the appearances he has found in the lung, spleen, and in the human subject, when affected with Scarlatina, has drawn upon his imagination largely, and has apparently discovered a similar appearance in the cow with Cow-pox?

If he has not, I maintain that he has discovered something in the appearance of those organs in Cow-pox that no other veterinary surgeon has; or are we to believe that he accidentally made *post-mortems* of cows at the Hendon Farm with some mysterious disease not yet recorded? If the latter supposi-

tion be correct, I cannot at present enlarge on the possibility or impossibility of its being the cause of Scarlatina; but if the former, then we may conclude that the professor's statement is correct that the disease is nothing but Cow-pox. I think, then, it will be quite satisfactory for all to know that Cow-pox Inoculation produces nothing, either in the human subject or the bovine species, but Vaccinia. As well might we expect a pea planted in the earth or anywhere else, to grow into a turnip or potato as the germ or seed of this disease to produce that well-known and specific disease Scarlatina.

It only requires very superficial observation, in my opinion, to see that the doctor has committed a very great mistake, first, with the disease in the cattle at Hendon Farm, and, second, in asserting that that well-known affection that every dairyman almost is acquainted with, could produce Scarlatina.

Paisley.

ALEX. POTTIE, M.R.C.V.S.

#### ASSISTANTSHIPS.

*"Tempora mutantur et nos mutamur in illis."*

SIR,—In comparing the veterinary profession with other professions, I find that the veterinary assistant is paid much less than any other class of qualified professional assistants; and this is not because the veterinary assistant's abilities are unequal to others, but it is partly due to the general lack of practical knowledge on behalf of some of the younger members of the profession, and who, in some instances, are willing to go for their "keep." Judging from the number of young fellows at present seeking berths, it seems that their chances of success are comparatively small. At the present time young veterinary surgeons are not judged on their merits, testimonials and references in many cases being entirely overlooked, in applying for a situation. I find that assistants are not paid nearly on an equality with their duties; they obtain an undue share of the work, have night cases to attend to, and are thoroughly employed during the day, and in large town practices the duties are very unlimited. Surely a qualified man, after having served a pupilage, and having successfully passed through college, is worth more than the ordinary wage of a groom; but in a great many cases he does not get it. Scores of young fellows are at present on the look out for situations, and in applying for such, and in stating a salary, in many cases receive no answer, partly because the number of applicants is so great that a good man has no chance, the man being chosen who will work the cheapest, irrespective of merits. Such men that work for very wretched salaries are not only lowering themselves professionally, but are tending to encourage veterinary surgeons to avoid giving men good salaries. Several friends of mine have lately been applicants for various advertisements for assistants, and their experiences related to me, in applying for such berths, have clearly shown that it is the positive aim of men, even in large practices, to employ those assistants who value their services at a mere nothing. The number of men annually qualifying is no doubt greater than the demand, and those who have not private means have to be content with such disgraceful salaries that the pecuniary position at present held by veterinary assistants is, I contend, entirely inadequate to their various duties and abilities. There are scores of cases where men are at present assisting veterinary surgeons, and are earning some hundreds a year for their masters, who receive the magnificent sum of about 30s. a week. This should not be the case. A good assistant should receive at the rate of £120 to £150 a year. I speak of town practices having large contracts, and where the assistant is, as far as work is concerned, the right-hand of the place. Men do not get through college at the present time without having very fair intellectual attainments, and a good general education in the first instance; and it is with great difficulty that studies are, by dint of hard work, overcome, and the young qualified man cast out, in his glorious



profession, to receive a salary which will barely keep him in clothes to dress decently and professionally. Twenty years ago veterinary diplomas were given away (judging from the present theoretical education of ordinary middle-aged and elderly practitioners), but the times are greatly advanced, and the public are becoming aware of the fact that very different men, both in education and in social position, are now emanating from veterinary colleges than in the olden times.

There will always be assistants to be obtained cheaply, but the majority of these are Scotch, and like the majority of Scotch-born veterinary surgeons, characteristic for their glaring meanness. What is to become of the young men at present filling our veterinary schools? This is a problem that is not easily solved. Several veterinary surgeons have lately been advertising for assistants, and some of these advertisements have been impudent examples of well-to-do practitioners offering the most wretched salaries it is possible to imagine. Unless a young qualified man is content to go as assistant for a "mere song," he stands but a poor chance of at present obtaining a berth, and in many cases with very indifferent men. There are exceptions, and it is a pity they are not numerous. We hear idle talk and suggestions for raising the status of the profession, and yet a great number of veterinary surgeons are doing their very utmost to degrade the profession in every way, by employing assistants and paying them on an equality with a "grocer's clerk," or a "small draper's cashier." I hope that the time is not far distant when more veterinary inspectors will be employed than there are at present, and policemen will discontinue to do the work of the veterinary surgeons. The profession has made rapid and considerable advances of late, and the last twenty years have shown veterinary surgeons to be gradually improving, socially, morally, and physically.

VERITAS.

#### A GLANCE AT OUR PRESENT POSITION.

SIR,—Year by year, each May, upwards of 2,000 voting papers are issued, a large but uncertain number returned and scrutinised. Time, labour, and money spent, candidates' letters and circulars scattered by the hundred and thousand all over the country. Year by year the names of the candidates are submitted to many who do not know them, their merits determined and their names left in or erased by those, in many instances, to whom they are utter strangers. Year by year the big machinery is in motion and brings forth some Principals and Professors of Colleges, a score of men from England, once in six years a man from Scotland, not much oftener a man from Ireland.

Without any bitter feeling, and solely for our common good as a corporate body, I put it once again to any sensible man in or out of the profession, "Is this a good system of election?" "Is it the best within our reach?" "Is it economical, or equally representative?" "Does it work easily and well, and give a good result?" "Should this system continue?"

Why take a big annual poll of the whole profession? Why, as this year, place on the voting paper the names of nine or ten southern gentlemen (all in merit very much alike, so far as I can judge), and ask every veterinary surgeon in the three kingdoms to decide between them? Why bother veterinary medical societies year after year, spending money, and making perpetual efforts to get men into Council? In all seriousness, would not the simple shaking up of the names in a hat give as good, if not a better result?

If it be the wish of the profession that Southern men in the future as in the past, crowd the Council-room and fill the Examining Board, while the men of the North look on with increasing apathy and indifference—If the

profession considers it fair that southern men, by the power of their numbers, shall easily and certainly carry their candidates, while those from Scotland shall only occasionally and with difficulty succeed—If it be the wish that the balance of power and the reins of government shall rest practically in the hands of a score of London gentlemen—then we bow to the decision, but we fail entirely to see the justice or the benefit of the proceeding.

We are, however, told that Scotchmen should go to London and make their voice heard. As well ask the voters of Fife and the Lothians, of Cork and of Londonderry, to journey each year to Westminster and make their voice heard in the House of Commons. On the first Monday of the busy month of May how many veterinary surgeons in Scotland and Ireland can afford to leave their practices and spend their time and a five or ten-pound note in an annual trip to London? What good would they do? The number may be counted on the fingers of the two hands, if not of one. Seeing the men cannot afford the pastime and perform the duty, why should they be debarred from sending by themselves men to Council to represent them?

The Council, as we have often said, is our Parliament. Why not fill it in a Parliamentary way? Why not let each country and college, each section and part, each individual member have his and its own special and direct representative in the Council?

The honour of being a member of Council is at the present time almost an empty and barren one, entailing not a little inconvenience and trouble. The men represent no one in particular, are responsible to no one very specially, they get elected, attend or do not attend to their duties regularly, they continue on or pass from the Council, and sometimes nobody very particularly cares. The men have not infrequently much work and trouble, and, at times, not too many thanks.

Increase the honour. Make the men Members of Council in reality. Let them put M.C. or C.M. after their names, if they desire it. Give each of them a constituency, by the members of which they will be chosen and sent, to whom they will be responsible, to whom they may look for praise or blame, and among whom they may occasionally come during their term of office, carrying new life and interest to members of the veterinary profession in the more remote and secluded parts of the country, and receiving in return due recognition and thanks for services rendered, and fresh stimulus, and encouragement, and advice for the duties that may be before them. Surely an easier, a better, a more economical, and more common-sense way.

*Fellowship.*—Now-a-days nobody but a Fellow can be a Council-man or an Examiner. The Fellows number about 200, the members 2,300—to the one Council and Examining-room open—to the others, without the fellowship examination, shut.

“Vis Unita Fortior” is the motto of the veterinary profession. Union, peace, and progress are desired by her, yet at the present moment she has driven back from her Council and Examining staff 2,300 of her members, deprived them of privileges they once enjoyed, and is now handing her posts of honour and management to a couple of hundred Fellows, not on their merits one whit better than hundreds of members around them.

It may be that this Fellowship Examination may in the future tend to raise the educational status and standing of the young veterinary surgeon; but, in the meantime, it has divided the profession, and given rise to much ill-feeling and unseemly strife. It may be that the authors of the Fellowship Clause had the good of their profession at heart, and that they gave due notice of their intentions; yet the fact remains that three-fourths of the members did not realise its full import and significance, and that by a very large number it is *yet* looked on with great disfavour. It may be that the number of Fellows will rapidly increase, that soon there will be 500 Fellows, yet there will remain



2,000 members. 500 sheep. 2,000 of a lower class—among them some of the oldest and best men in the profession. Last May we had the choice of 2,500 men for the Council and Examining Board; this year the choice is restricted to 200—surely progress in the wrong direction. In the political world every effort is being made to do away with such class distinctions. Our members of Parliament do not require to be Fellows—they are not all holders of high degrees from Oxford and Cambridge. The House of Commons—the noblest representative legislative Assembly, as we fondly believe in the world, is open to the humblest holder of the franchise, if by the votes of a constituency he is deemed worthy; but the Council of the veterinary profession is shut to all save this very higher order of persons—the Fellows!

That the principle of the Fellowship clause is wrong, take two examples. Extend this principle; create a third and still higher order, say, as has been proposed, that of Doctor of Veterinary Medicine (V.M.D.). From the Fellows choose ten first doctors, from age and early date of their diploma. Institute another examination, and let the fee be 25 guineas, and soon the profession will only have fifty V.M.D.'s eligible for the Council and Examining Board. Extend the principle still further, and you arrive at ten; and lastly at one, to whom Council and examining-room alone pertain—a Czar not always the embodiment of justice and probity. That is the progress towards which the Fellowship clause tends—the true embodiment and development of its principle.

Again, an elderly and very honourable member suddenly finds himself shut out and deprived of the privileges conferred by his diploma. He feels that he has done nothing to forfeit these privileges. He looks on the call to the Fellowship Examination as an injustice, and almost an insult, and, sooner than submit, he quietly retires and ceases to take any active interest in the public affairs of his profession. This gentleman has a son, and at five or six-and-twenty—fresh almost from school and college—the young gentleman easily passes the Fellowship Examination, and then we have the strange spectacle of a young, comparatively inexperienced practitioner eligible as an examiner and for the Council, while his father, who in experience and ripeness and mellowness of judgment is worth half-a-dozen of him, stands out in the cold.

We all wish to raise and elevate our profession, and the way to effect this is surely not to give that profession a heavy-working, cumbrous, expensive system of election, favouring numbers and populous centres—surely not to set up a big examination in its midst and give the posts of honour to all who pay the fee and pass or scramble through—surely not to choose all its councillors and examiners from one favoured country or city, and leave all others unnoticed. The way to raise and elevate our profession, and make it peaceful, prosperous, and truly progressive, in my humble opinion, is simply to give it a simple, easy, right, and just system of election, giving each and every section and part its fair and proper share of representation—to have one, or, if desired, half-a-dozen degrees for distinguished merit and services, but to leave the posts of honour and management open to the humblest holder of its diploma, if worthy—looking abroad and choosing from each country and section its best men as councillors and examiners without distinction and without favour.

*The Examinations.*—About five years ago, before the present Board of Examiners had entered on their duties, I dared to lift up my protest and say that that Board was not what the Council of the Royal College of Veterinary Surgeons should have appointed. I dared to think and say that a Board chosen exclusively from London and England was not a National Board, and that its action would not be satisfactory. Against the gentlemen personally who were appointed examiners I said not a word—no one respects or admires

each and all of them more than I do in their private capacity. My words were simply directed against them as a public Board.

And now, after five years' trial, has the action of this Board been satisfactory? Let teachers and students, parents and guardians, and the profession at large answer. Whence the deep dissatisfaction so often expressed at the result of some examinations? Whence the rows on the streets, the egg-throwing and mobbing, the rioting and speech-making on the part of the students, with the open or half-concealed sympathy and concurrence of some of their teachers? Is the Examining Board blameless? Does the fault rest solely and entirely with the students and their teachers? Rejections have been many and frequent, and have these rejections been fair and just? Have none but the best students been chosen and passed? Has the "wheat been carefully winnowed from the chaff"?

Let us quietly approach the examining tariff and see. Take the first or A examination. The subjects are chemistry, botany, and materia medica; the marks "very good," "good," "sufficient," "indifferent," "bad." Two "indifferents" reject, two "goods" or "sufficients" and one "indifferent" pass. And thus a man who is a good chemist and a fair botanist, but whose knowledge is indifferent as to the drugs and remedial agents which in after life he will be called to prescribe in the treatment of disease, is allowed to pass on to his second examination. Is this fair, and right, and desirable? Is this winnowing the wheat from the chaff?

Take the B examination. The subjects: horse anatomy, comparative anatomy, and physiology; the marks the same as in A. In other words, the man who has a fair knowledge of physiology and of the internal organs and general anatomical arrangement of the cow, sheep, dog, and pig, but whose idea of the anatomy of the horse is hazy and indifferent may pass, nay, many men have passed on to the third or final examination. Is it the wish or the desire of the members of the profession at this advanced time that a young man "indifferent" in horse anatomy, "indifferent" as to a knowledge of the framework of the animal that is the chief object of our care, should pass into our profession? Surely not. Surely the "wheat needs better winnowing" than this. Show us the man who knows his horse anatomy, and knows horse and cattle practice, and we will show you the man who, practically, is not likely to disgrace his profession; but to pass a man "indifferent" in horse anatomy or physiology is surely really a little behind the time.

In the third or C examination, however, the closure begins to be applied in earnest. Among the candidates there may, and often are, men who have been marked "indifferent" in one, if not in two, subjects of the A and B. And they have here to run the gauntlet of six subjects, practical and oral horse and cattle practice, morbid anatomy, and pathology, and if out of these they get two "indifferent" marks they are rejected. Two "goods" and one "indifferent" in the A and B pass; four "goods" and two "indifferents" in the C reject. In ordinary arithmetic two is to one as four is to two; but in the arithmetic of the Examining Board of the R.C.V.S. matters are different.

It appears to us that in their A and B examinations the students are leniently, probably too leniently, treated, while in their final they are sifted and winnowed, and passed or relegated to their studies in a way they do not very well understand. The farmer does not leave the dressing of his wheat mainly to the last operation; his "winnowing" from the first to the last is gradual and thorough, and we think it would be fairer and kinder to the young fellows to apply the pressure a little sooner. Make the A and B examinations more searching and severe. "Winnow the chaff from the wheat" there, and ensure that none but really deserving men pass on to the last and principal ordeal.



That the Scottish practitioner who at the last moment was put on to fill a much regretted vacancy, has been looked on by the students as the chief cause of the many rejections we know, and Mr. Greaves, of Manchester, is even thankful that no others of his nationality were examiners, or the results would have been very serious. We believe, however, that despite his so-called "sarcastic" manner, the markings of this examiner were really as fair and as friendly as those of some of his colleagues. If the marks of the students at the cattle table were quietly compared with those of—say the horse practice sheet, we believe that the difference would be very slight. That one young Scotch practitioner should so influence all his other five London co-examiners carries absurdity on the face of it.

It may, perhaps, please Mr. Greaves to know that before now there has been a Veterinary Examining Board in Scotland composed largely of men resident in this country, a Board which, in merit and thorough capability of testing and determining the efficiency or non-efficiency of the students, would compare very favourably with that of the R.C.V.S.; and it may also interest the economists of the profession to know that the so-called "honorarium" of the gentlemen composing that Board was not large. Many a hard six hours spell have the members of the old Highland Society Veterinary Board had for a guinea or less a day, and a glass of sherry and a sandwich; and yet in its better days that Board might, without presumption, say it was "second to none." In its day the colleges, were not, of course, crowded with students—there was not the necessity that now exists for such stringency of examination. It may have erred a little on the side of leniency, but on its recording sheet the merits or demerits of the students seldom failed to find their proper place. From a slight experience of both Boards I would say that the Examining Board of the R.C.V.S. might with advantage adopt some of the practices of the Board that was once its very successful rival.

The election of a new Examining Board takes place, we believe, in August. Let us hope that the Council will be equal to the occasion; that they will not pass by Scotland and Ireland this time; that they will make a truly national and thoroughly-representative Board—not all from the City of London. Men not of crotchets, or ideas, or sarcastic manners, but large-hearted, kind-hearted, just and firm, not afraid to pluck seventy per cent. of students if they deserve it, nor unwilling to pass seventy out of every hundred if worthy. The post of an Examiner is, we think, one of the hardest work and greatest responsibility. The labourer is worthy of his hire. Give the Examiners all and every encouragement, trusting that they will carefully "winnow the wheat from the chaff," that no bad student may pass, and no good student be rejected. "Chaff among the wheat" is bad—"wheat among the chaff" is no better.

*Inoculation in Pleuro-pneumonia.*—On this subject space forbids entering. After a good deal of further experience this year, we are far more in favour of the operation than ever. We go now the length of stating that even granting Professor Brown's statement that "after inoculation certain symptoms remain which may produce disease" were true, there is no need, even in that case, for a wholesale slaughtering, and that to slaughter up twenty, thirty, or sixty of a man's cows or cattle because two or three or half a dozen of their number have shown Pleuro-pneumonia is a piece of cruelty, and a waste of public money. We are convinced that inoculation, as practised by Mr. Rutherford and those who think with him, only requires to be still more carefully examined, tested, and tried, to commend itself to the judgment and approval of every right-thinking man in the profession. In next number we may say a few words on the subject.

Slateford, Edinburgh, 16th June, 1887.

C. CUNNINGHAM.

## THE OFFICE OF TREASURER.

SIR,—It is with sincere regret that I find, by the proceedings of the Council of the Royal College of Veterinary Surgeons, that Time, after a long struggle, is beginning to get the better of Mr. E. C. Dray.

I thoroughly endorse everything that was said at the meeting as to the great services he has rendered the profession, and regret somewhat that some of the councillors did not dilate more in this direction, instead of upon "the great loss to every member of the Council whose acquaintance and friendship he had, to lose him as a member of it."

Mr. Dray's duties, particularly of late years, have been of a difficult but not showy character; it is therefore not improbable that they have not received sufficient recognition from the unthinking.

In my humble opinion, Mr. Dray, by his zealous services as treasurer, and by his general integrity, deserves nothing less than to have his portrait suspended on the walls of the building which his financial management has done so much to rear.

Failing any other mode of expressing its gratitude to Mr. Dray, the Council was justified in re-electing him to his office, notwithstanding his desire for relief. But the progress of the profession demands that too much must not be sacrificed to sentiment.

When a servant becomes too old for his work, let us honour him and show him our gratitude and respect in every possible way. I do not think we can do too much in this direction to Mr. Dray, but we must get another efficient man in his place. There are plenty of younger men fit to take Mr. Dray's burden on their shoulders.

Doubtless one of the chronic vice-presidents would fill the office well. Personally I would recommend Mr. T. F. Simpson for election next year. He is a clear-headed business man, exceedingly bland and full of energy.

SACK.

## LANCASHIRE VETERINARY ASSOCIATION.

THE Quarterly Meeting will take place at the Blackfriars Hotel, Manchester, on September 2nd, when Professor Williams will introduce for discussion the subject of "Therapeutics." Tea at 5 o'clock; business at 6 o'clock promptly.

## Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from C. Cunningham, Slateford; A. Broad, London; J. A. Nunn, A.V.D., Natal; H. Tweedley, Glasgow; A. C. Stewart, Cardiff; W. Hunting, London; A. W. Hill, London; A. E. G. Robinson, Warrington; J. Smith, Huntingdon; A. Baird, Edinburgh; "Veritas"; F. W. Somers, Leeds; A. Pottie, Paisley; H. Sweedley, Kirkcudbright; T. Chambers, Dudley; J. H. Wilson, Newbury.

BOOKS AND PAMPHLETS: *L. Baruchello*, Pododermatite Flemmonosa Epizoötica; *J. H. Steel*, Diseases of the Ox; *J. Law*, The Farmer's Veterinary Adviser; Procès-Verbal de l'Académie Royal de Médecine de Belgique.

JOURNALS, ETC.: *Journal of National Agricultural Society of Victoria*; *Echo Vétérinaire*; *Thierarzt*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Deutsche Zeitschrift für Thiermedizin und Vergleichende Pathologie*; *Quarterly Journal of Veterinary Science in India*; *Farm, Field, and Fireside*; *Annales de Médecine Vétérinaire*; *Mark Lane Express*; *Clinica Veterinaria*; *Journal de Médecine Vétérinaire*; *Edinburgh Medical Journal*; *American Veterinary Review*; *Live Stock Journal*; *Medical Press and Circular*; *Hufschmied*; *American Live Stock Journal*; *London Medical Record*; *Recueil de Médecine Vétérinaire*; *Revue Vétérinaire*; *British Medical Journal*.

NEWSPAPERS: *South Wales Echo*; *Bristol Times and Mirror*; *York Herald*; *Leeds Mercury*.



# THE VETERINARY JOURNAL

AND

## Annals of Comparative Pathology.

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SEPTEMBER, 1887.

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### NOTE ON THE EXCRETION OF UREA.

BY FRED SMITH, A.V.D., ARMY VETERINARY SCHOOL, ALDERSHOT.

THE quantity of urea passed by a horse in health and disease was discussed lately at a meeting of the Scottish Metropolitan Veterinary Medical Association. As the composition of the urine of healthy horses is being studied in the laboratory of the Army Veterinary School, and as I have made during the last fourteen months a number of analyses with the object of publishing the results when completed, I may be permitted to state the quantity of urea for twenty-four hours.

There is no analysis of the urine of any value that is not calculated *on the total quantity passed in twenty-four hours*. The difficulties of obtaining this in healthy animals is very considerable, and I have had to construct a special stall for the purpose. To obtain the total quantity in sick animals is quite impossible, or, at any rate, is out of the question unless a special form of urinal be worn.

Calculations made as to the excretion of any substance with the urine, are unreliable when the total quantity of fluid passed is unknown, for the reason that the amount passed by the same horse will vary from day to day, and the quantity passed by different horses is very dissimilar. Some may pass two gallons, and some two quarts in twenty-four hours, and so on. It is obvious that the quantity of urea and other matter passed per ounce in each of the above urines will not be the same; the urine of two gallons will contain per ounce only one-fourth as much matter as the urine of two quarts; therefore, it is clear that any comparison between them ounce for ounce can only be misleading. Two horses, we will suppose, for the sake of argument, are excreting exactly the same amount of solid matter daily, but one is

passing two gallons and the other two quarts of urine in twenty-four hours ; to compare the chemical composition per ounce, without knowing the amount of urine secreted by each animal, will have the effect of showing that one is secreting four times the salts of the other, for it is obvious that every ounce of the two-quart urine must contain four times the amount of the two-gallon urine, if it is to equal it in the weight of solid matter.

The error likely to arise from a non-observance of this rule, of only calculating results on the total quantity passed, is obvious. Up to the present my analyses show that healthy horses pass on an average 160·63 grammes of urea daily ; this quantity is equal to 5 ozs. 291 grs., and is contained, on an average, in ten pints of urine ; but the amount of this latter secretion will vary considerably even in the same horse from day to day. The smallest amount I have known passed is  $5\frac{1}{2}$  pints, and the largest 17 pints. If we assume the average amount of urine passed to be 10 pints, then the average urea will equal 12·39 grains per ounce.

I have only once had an opportunity of examining urine from a case of Azoturia. The total quantity passed in twenty-four hours I do not know, so it is impossible to say whether the urea and other substances were normal or not. I can only *roughly guess* whether the substances were in excess or deficient. Azoturic urine: Sp. gr. 1028 (1035-1040 normal) ; reaction slightly alkaline (markedly alkaline in normal urine) ; colour, deep chocolate. The urea equalled  $9\frac{3}{4}$  grains per ounce. I believe the chloride of sodium, lime, and sulphuric acid were much less than in normal urine, but on this and the above points it is impossible to be certain, as the total urine secreted was unknown. The albumen was large, being one-third of the bulk of the fluid passed. Ammonia was present.

If the statements made at the Association, concerning the amount of urea passed, have been calculated on the total quantity of urine secreted, then there is no occasion for this note.

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### SCHIRROUS CORD.

BY H. J. HUNT, M.R.C.V.S., NEWBURY.

HAVING operated on several cases of schirrous cord lately, I would like to record the cure of the worst of them, and thereby draw the attention of the profession to the use of some of the much-coveted expensive instruments on which the veterinary medical associations would like to spend their money.



Last autumn my opinion was asked as to the nature, consequences, and treatment of a gradually increasing excrescence of this kind, found on a big chestnut hunting gelding. I recommended excision, and having waited until the middle of May, was informed that the operation must be done under chloroform.

On May 28th I went to operate. The chloroform was administered by means of the most approved chloroform cap, which was found to be a most elaborately awkward contrivance, more calculated to waste the drug than administer it to the horse. However, with almost excessive care, the horse was rendered quite insensible. He was then fastened with a rope in the usual position for castration. The lump, which by this time had greatly increased in size, was fixed by a suture, and a dissection was made upwards towards the abdominal ring. After cutting upwards about six inches, to a point where no schirrosity could be felt, the chain of an ecraseur was put round the remaining attachment, and on pressure being applied the chain immediately broke; the same result ensued with another chain, leaving me to fall back on the actual cautery—a proceeding commented on by the medical attendant of the family, who was present. The wound was left open for drainage, and the animal allowed to regain consciousness. When he came round, he had to make two or three attempts before he staggered to his feet, and then he walked into his box with very uncertain steps. The tumour weighed 3 lb. 2 oz., and measured ten inches long, being pear-shaped.

After being very sick for a day or two, his appetite gradually returned. On June 1st the wound, which was being treated with carbolic dressing, and had been granulating, was found to be red and angry-looking, and giving off a very offensive smell. Some gangrenous pieces of skin round the edges having been removed, Ol. Eucalyp., the dressing lately recommended for use in these cases by Mr. Fred. Smith, was tried, and with remarkable success; the swelling subsided, the immense hole filled up, the fœtor disappeared, and the stiffness of the hind quarters went away. The animal lay down. On June 20th the horse was sent to exercise, and visited for the last time. Now he is quite well, and is in training for the next time the hounds are near.

With a towel, a sponge, an iron, and a knife I could have done the same operation, and saved the money I have spent over my useless chloroform cap and ecraseur.

[The same accident has happened with ourselves when using the chain ecraseur for the removal of these growths. It is entirely obviated by the employment of the steel wire ecraseur, which is in every way preferable to the hot iron.—Ed. V. J.]

## RHEUMATIC ENDO-CARDITIS.

BY J. A. NUNN, F.R.C.V.S., F.R.G.S., ARMY VETERINARY DEPARTMENT,  
MARITZBURG, SOUTH AFRICA.

A SEVERE type of Rheumatism is very common in horses in this colony, particularly in animals recently brought down from the Orange Free State; it is most prevalent in the South African autumn (February, March, and April). The attack usually comes on very suddenly, with great pain, heat, and swelling of the joints, particularly the stifles and shoulder joints, with considerable febrile disturbance and large increase of temperature. Usually the attack yields to ordinary antiphlogistic and counter-irritant treatment, with the administration of salicine, salicylic acid, or salicylate of soda; but many cases assume a chronic form. In these rapid marasmus is invariably present, and when this sets in the case is almost hopeless. The animal from which the specimens that I send you drawings of were obtained was a trooper of the 6th Dragoons. On *post-mortem* examination it was found that there was considerable arthritis of the stifle joint, with ulceration of the cartilage, the surface being literally honeycombed. The drawing No. 1 shows the appearance of a transverse section through one of these ulcer pits. The cells round the margin of the ulcer have increased in size, some developing more than one nucleus. The edges of the ulcer show a number of ragged projections from the broken-down matrix projecting into the orifice. The drawing No. 2 is a vertical section through one of the tricuspid valves, in which well-marked endocarditis is present. I have endeavoured to show the appearance of a section through one of the ulcers, the endocardium being destroyed, and two granulating masses growing up from the abraded surface. Both specimens are from the same animal, and are seen under Zeiss's BB objective and No. 2 eye-piece stained with Ranvier's picro-carmine.

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## Editorial.

### THE EXTINCTION OF RABIES AND HYDROPHOBIA.

THE report of the Select Committee of the House of Lords on Rabies, which appears in this month's Journal, may be looked upon as a complement to that of the committee on Pasteur's method of preventing the disease by inoculation; but to the veterinarian and sanitarian it is of far more importance, inasmuch as it enunciates the opinion which has been long entertained by those who have studied the malady, that the disease may be stamped out once and for aye, if only the proper measures are adopted. In the report itself there is nothing which had not already been made known and insisted upon by the veterinary profession in this country, but unfortunately ignorance and a pseudo-sentiment have been only too successful in maintaining the malady in all its virulence and extent. Those who oppose all measures for the suppression of the most destructive and loathsome diseases of mankind have done their utmost to keep Rabies in our midst, and the numerous deaths of human beings and animals from it may fairly be credited to their account. Now, however, that a most influential and trustworthy body of noblemen have sifted all the available evidence they could procure, and have drawn up such a fair and explicit report, it is to be hoped that we shall hear no more of such sentimental nonsense, and that general measures will be drawn up and carried into operation which will free us from a scourge that should have been rooted out long ago. With the disappearance of Rabies, veterinary science will have achieved another victory.

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### THE ETIOLOGY OF "ROARING."\*

BY DR. GUSTAV VAERST, ROYAL VETERINARY SCHOOL, HANOVER.

THERE are many cases of paralysis of the vocal cords mentioned in the literature of human medicine, which originate from intra or extra-cranial causes. Among the first may be noted, Encephalitis, diseases of the medulla oblongata, with resulting degeneration and softening of the vagus or origin of the eleventh nerves, tumours in the cranium or foramen lacerum, caries of the cranial bones, etc. Among the extra-cranial causes may be numbered traumatic neuritis, paralysing poisons, infectious diseases, swellings in the neighbourhood of the tract of the accessorius, vagus, or recurrent nerves, disease of lymph glands, etc. A few specially interesting cases are reported by Romberg and Tiemssen of uni-lateral and bi-lateral paralysis of the vocal cords, following upon paralysis of the accessorius.

The scarcity of observations of this description in veterinary practice is probably chiefly due to the undeveloped state of this branch of knowledge, and to the great difficulties in the way of observing nervous disease in the lower animals. Nevertheless, here and there records are to be found of

\* Synopsis of a paper in the *Deutsche Zeitschrift für Thiermedizin*, 22nd June, 1887. Translated by F. Raymond, F.R.C.V.S., Army Veterinary Department.

Roaring following upon mechanical lesions, such as phlebotomy. Such factors as harness pressure and wind-sucking straps do not appear to be admissible as causes, because the recurrent lies too deeply to be likely to suffer sufficiently from this kind of pressure to become paralysed. Günther, jr., does not believe that Roaring follows disease of the thoracic glands, nor in the "Spasmodic Roaring" which follows paralysis of the commencing portion of the vagus, and consequent paralysis of the Crico-thyroideus muscle, the result of enervation of the superior laryngeal nerve. Roaring is observed after Strangles and Influenza. It is well known that diseases which cause thickening of the mucous membrane or œdema of the glottis will give rise to abnormal sounds during respiration. But Roaring, *per se*, only occurs after an inflammatory affection, and after lesion of the glands lying in the course of the nerves, the sub. and retro-pharyngeal, trachealis superiores, tracheales mediæ, and trachealis inferiores. It is conceivable that the diseases mentioned above—like Diphtheria in man—have a predilection for attacking the muscles of the throat, and that the specific process is communicated to the peripheral nerves, thus leading to paralysis of the nerves.

This neuro-pathological genesis theory may be placed side by side with one which characterises the disease as an inflammation of the larynx and pharynx, which subsequently attacks the muscles of the larynx, ending in degeneration of the same.

Gerlach explains one of his cases of roaring by the latter theory.

Anatomical demonstration of the first occurrence of paralysis of the muscles, resulting from Strangles or Influenza, is wanting.

It is only while the nerves are in the thorax that they may become differently influenced from anatomical causes; in the channel of the neck they are upon an equal footing.

Scientific experience has proved that ninety-six per cent. of cases of Roaring are due to insufficient tension of the vocal cords, due to atrophy of the dilators of the larynx, Crico-arytenoideus post. (principally), Crico-arytenoideus lat., and Arytenoideus trans. This atrophy is due, almost without exception, to paralysis of the motor nerve, *i.e.*, recurrent. The disease almost invariably attacks the left side.

Paralysis may occur suddenly or gradually; it may be complete or partial (Paresis). It may have a favourable or unfavourable prognosis, according to its genesis.

If a motor nerve becomes severed or otherwise paralysed, the peripheral end, going to the muscle, becomes gradually unstimulatable, undergoes fatty degeneration, and later on, atrophy. The muscle it supplies also atrophies. Various authors have demonstrated that section of the right or left recurrent invariably causes Roaring. According to Günther, jr., there is "never atrophy of the dilators without paralysis of the nerves," in Roaring.

The almost constant occurrence of lesion of the left side of the larynx is due to the peculiar position the left recurrent holds in the thorax.

The left recurrent leaves the vagus over the base of the heart, and, covered by the pleura, goes to the left side of the aortic arch, over the Ductus Botalli. It then passes inwards and forwards round the arch of the aorta. Here it passes for about 5 cm. between the aorta and the trachea, being bounded posteriorly by a mass of the posterior glands of the middle mediastinum. It is also bridged over by fascia originating from the endo-thoracic fascia and terminating in the fibres of the pericardium. This fascia is divided on the left surface of the trachea into two portions. The left part is connected with the fibres of the left part of the pericardium, and the right goes to the right part of the pericardium. The nerve passes between the latter and the trachea, and can be seen shining through its covering. In its further course it gradually gets to the under surface of the trachea, and bends round between it and the



arteria innominata or carotid, passing out of the chest in apposition with the œsophagus, under the sympathetic and vagus, to the left surface of the trachea, and travels up it in front of the carotid. Arrived at the upper third of the neck, it again travels a short distance along the œsophagus, and then in the channel between it and the trachea, until within about 2-3 cm. of the first ring; it then passes obliquely outwards and forwards, between the Cricopharyngeus and Crico-arytenoideus posticus, and loses itself in the latter and the Crico-arytenoideus lateralis and transversus.

The N. recurrens dextra is given off by the vagus as it appears from under the A. subclavia dextra. It does not come in contact with the pleura, because there are veins which intervene. It passes at once inwardly round the anterior intercostal artery, traverses the anterior mediastinal space, in the angle formed by A. profunda cervicis and A. vertebralis on one side and the trachea on the other, and leaves the thorax under the trachea, the sympathetic, and vagus. It then reaches the outer surface of the trachea, and travels up this organ in front of the carotid in the same way as the left recurrent.

It must be admitted that in consequence of above-named relations of the left recurrent with the pleura, an inflammation of the latter might implicate the nerve. Speaking upon disease of the left side of the larynx as a result of Pleuritis, Dieckerhoff says: "I know of several cases in which horses which have recovered for some weeks from an attack of Pleuritis have become roarers." It is probable that in such cases the peripheral portion of the nerve is attacked; that the exudative process which occurs in Pleuritis involves the nerve in the chest, and brings about Neuritis. Both neurilemma and neuroglia may become affected, resulting in a diminution of the conductivity of the nerve. Severe Neuritis, leading to degeneration of the fibrillæ, is almost invariably followed by atrophy, but even a mild perineurotic process may cause atrophy of the muscles supplied. It may also occur that callous thickenings on the pleura involve the nerve in a process of cicatricial contraction. It is notorious that disease of the peripheral extremity of nerves is promptly followed by disturbance of the nutrition of the muscles supplied; even the slightest irritation of the nerve is not without result.

The mass of glands, situated in the middle mediastinum, may become diseased, and by swelling press upon, and thus paralyse, the left recurrent.

In order that my next remarks may be better understood, it is necessary to say a few words about nerve-stretching and nerve-pressure. Nerves may be stretched to a certain extent, and recover soon afterwards. This process, which at first causes increased sensibility, if carried too far, produces an exactly opposite result. If the stretched nerve be examined microscopically, it will be found, as a rule, that Schwann's sheath is unchanged, but that the axis cylinder, neurilemma, and medulla are altered and may have vanished. The elasticity and strength of the nervous elements vary in individuals, and are also dependent upon the diameter of the nerve, so that no general measure of elasticity can be laid down. It may be assumed that the axis cylinder, the essential carrier of excitability, being the most delicate substance, suffers most from stretching and pressure.

Great mechanical shock (a blow or strong pressure) causes paralysis of a nerve, by disorganising its molecules; whereas gradual pressure causes degeneration by insufficient blood supply. Fontana in 1797 had already demonstrated that gradually-increasing pressure destroys the conductivity of a nerve. Motor fibres suffer more particularly from compression, for Heilroth observed in radial Paralysis (in man), due to the use of crutches, that the disease first attacked the motor and afterwards the sensory fibres. Lüderitz makes the same observation.

The left recurrent is exposed to both stretching and compression to a great extent. Under normal circumstances, it is exposed to considerable pressure

by the posterior aorta. It should be borne in mind that the left recurrent is situated between the aorta—just where the blood pressure is greatest—and the trachea. The nerve cannot escape the pressure, for it is in apposition with the hard rings of the trachea. If the nerve, under normal circumstances, is compressed, how much more will this occur under pathological circumstances, when the blood-pressure is increased. Prof. Sussdorf has noticed an almost constant flattening of the nerve at this part, as a physiological result of the pressure.

There are not wanting, in human medicine, of instances of Aneurysm of the aorta causing atrophy of the left recurrent. As Aneurysms occur sometimes in horses, perhaps more frequently than we have hitherto observed, it is possible that these may be one of the causes of Paralysis of the left recurrent. Aneurysms will even cause bone to become absorbed. Paralysis might also be caused by an aortic Aneurysm stretching the nerve backwards.

The left recurrent in its onward course is bridged over by fibrous tissue, which originates in the endo-thoracic fascia, and is inserted into the pericardium. This tissue, as well as the great blood-vessels, has to bear no unimportant part of the weight of the heart, so that considerable tension is exercised upon it, causing compression of the nerve. This tension, under pathological circumstances—Hydrops pericardii, partial or complete hypertrophy of the heart—may become increased.

The left recurrent is again in a similar position, as regards liability to pressure, when it passes between the Arteria innominata (or the common carotid) and the trachea, to that which it is in when passing round the arch of the aorta. The pressure, however, is not so great; nevertheless, it may, under certain circumstances, be sufficient to do harm.

Again, we have the œsophagus, which passes to the left of the trachea, in the anterior part of the chest and lower part of the neck, and which, therefore, comes very near the left recurrent. Dilatations and tumefactions of this organ might interfere with the nerve and cause paralysis.

Finally, a similar pressure might occur where the recurrences pass between the carotids and the trachea, to take up a position on the anterior edge of the carotid. The left recurrent is about a third longer than the right.

If we now examine the course of the right recurrent, we shall find that it is given off by, and leaves the vagus, almost as soon as the latter enters the thorax. As it is not in connection with the pleura, it suffers no direct danger in the Pleuritis of Influenza. It passes round an important blood-vessel, the A. subclavia dextra, which, under circumstances which have already been alluded to, might cause extra pressure; but it will be seen that the right recurrent is not in such close apposition to the trachea as the left, and is, therefore, better able to escape compression. Even an aneurysm of the A. subclavia dextra would not interfere with the nerve to any great extent.

When the nerves have reached the anterior border of the carotids, the chances of their becoming injured are equal.

I know of no nerve which is subject to as many dangers as the left recurrent.

The hereditariness of Roaring is almost constantly given as one of the causes of the disease. This may be justifiable if hereditary predisposition is meant, and not congenital disease. Owing to inherited anatomical variation in individuals, one animal may suffer slightly, another still less; whereas in one animal the nerve merely differentiates dangerously in its course; in another, the nerve being in a similar dangerous position, may become influenced by the factors already mentioned—blood-vessels, fascia—endo-thoracica, etc., etc.—and thus diseased.



These anatomical peculiarities may be transmitted, and form the *causa internâ* of Roaring in the offspring.

It is worthy of note that well-bred (English) horses frequently suffer from Roaring. These animals have a large vascular system and high blood pressure, and thus inherit a constitution exposing the left recurrent to all the dangers which have been noted above.

Martin, in addition to the dangers due to vascular arrangement, draws attention to those caused by the "enormous" length of neck developed by breeding.

I am not in a position to state how far Roaring, caused by mechanical injuries, is hereditary.

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### EQUINE SYPHILIS IN THE UNITED STATES OF AMERICA.

THE horse disease known in France as the "*Maladie du Cœit*," in Germany as "*Beschalkrankheit*," and to the Arabs as "*El Dourine*," has been discovered in the United States, having been carried there by French stallions imported in 1885. Illinois appears to be the state in which the malady has manifested itself, and our latest information is to the effect that nine Norman stallions are in hospital at Bloomington suffering from the disease; two imported stallions and forty mares had died, and twenty mares are now affected. This is a very serious condition of affairs, and unless promptly met may greatly damage the horse-breeding interests of the Western States. The disease is analogous to human Syphilis in being communicated chiefly during copulation; in some other features, it also resembles that scourge. In "*Veterinary Sanitary Science and Police*" it is fully described; but since the publication of that work the Austro-Hungarian Government has published the researches of one of the teachers at the Buda-Pesth Veterinary School, which throw much additional light on the disorder, which is as yet happily unknown in this country or its possessions. Once begin to import stallions for breeding purposes from the countries in which it prevails, however, and our immunity is gone.

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### REPORT OF THE COMMITTEE OF THE HOUSE OF LORDS ON RABIES IN DOGS.

ON May 17th the House of Lords appointed a Select Committee to inquire into and report upon the subject of Rabies in dogs, and the laws applicable thereto. The Committee consisted of the Lord President of the Privy Council (Lord Cranbrook), Duke of Beaufort, Earls of Coventry, Carnarvon, Onslow, Zetland, Kimberley, Milltown, and Lords Walsingham, Ribblesdale, Poltimore, Belper, and Mount-Temple. A large number of witnesses were examined, those of the veterinary profession being Professor Brown, C.B., Dr. Fleming, C.B., Professor Pritchard, A. J. Sewell, W. A. South, J. W. Hill, W. Hunting, and J. Rowe.

The report of the Committee has just been issued, but not the evidence upon which it is based. It is as follows:—

1. That although witnesses have spoken for and against M. Pasteur's system of treatment of Hydrophobia, we do not think it within our province to discuss or question the conclusions of the Committee appointed by the Local Government Board to inquire into that treatment. The evidence given to us on this point, having a close connection with the matter referred to us, could not well be excluded, but considering that the highly competent

persons who formed the Pasteur Committee arrived unanimously at their decision after very full investigation and confirmatory experiments, we are not prepared to throw doubt upon the result. It may be hoped, therefore, that a preventive remedy has at length been found for a disease which, when the symptoms are developed, appears incurable, and that further tests will so establish the system that it may be applied not only in Paris, but in every place where the need may exist and scientific skill be found.

2. We believe that while it cannot be absolutely demonstrated that Rabies does not arise spontaneously, yet it is practically proved that subcutaneous inoculation with its virus is the only ascertained means of imparting the disease, and that in order to check it every effort should be made to prevent the dissemination of that infective substance.

3. The fact that Rabies is and has been long unknown in certain countries, in none of which are there verified instances of its spontaneous development, strongly confirms the prevalent scientific opinion that such development is not credible. The evidence as to the islands of Réunion and Mauritius has a weighty bearing upon this question, while Scandinavia affords a like testimony.

4. We may remark that climatic conditions have no effect in producing or increasing the malady, and that in the hottest and coldest regions it is absent; and it has been shown that no special treatment of dogs, however trying to them, can bring about this particular affection. For all practical purposes, therefore, it may be dealt with as transmitted by inoculation only.

5. The frightful character of Hydrophobia in man naturally engenders horror at the bite of a dog, and unreasonable dread very often occurs. It ought to be known, however, that the percentage of those bitten by a rabid dog who become infected is by no means large, and that various causes operate to lessen the danger. Where clothes intervene between the teeth and the flesh the risk is less, and successive bites may wipe off the saliva, so that from the later ones less serious consequences are to be apprehended. The effect of immediate cauterisation is doubted by some, but in the present state of knowledge it is prudent to resort to it, and the methods most recommended are the hot iron or carbolic acid. It is clear that panic attributes Rabies to many dogs which are free from it, and there are indeed so few which really have the disease, that the great probabilities are in favour of persons bitten escaping the consequences too readily feared. During the existence of the stringent police order in London many of the force were bitten, some by dogs ascertained to have been rabid; protective measures were taken, and none suffered from Hydrophobia, and at the Dog's Home, while bites have been numbered by the thousand, there has not been a unit to represent that fatal disease. Should M. Pasteur's treatment prove a preventive, the fears which have in themselves most prejudicial effects upon those who suffer from them will be further allayed.

6. The symptoms of Rabies in the dog, when fully developed, seem to be so clear that they may be accurately described, but sometimes a bite is the earliest indication of them, so that danger may precede the warning. Still, as it seems to be proved that a dog's bite is not likely to impart disease until the incubation is complete and the external indications begin to develop themselves in a form which to experts is unmistakable, it is very desirable that a knowledge of these symptoms should be widely spread, and there is one ready method by which this object may be secured. As every owner of a dog ought to have a license, an endorsement of the early signs of Rabies upon it would ensure a large circulation among those most interested, and Sir Algernon West (Q. 1945) is of opinion that there would be no difficulty and little expense in the adoption of this proposal.

7. It has been suggested that in all cases where premonitory symptoms of



Rabies appear, the dog should be at once handed over to the police, and by them to a veterinary surgeon, who would, of course, require a fee. This process might perhaps succeed in a town or populous district, where an adequate force, a fitting place for the reception of dogs, and skilled veterinary surgeons could be secured; but it is hardly applicable to wide country districts, where the population is thinly spread, and where it could scarcely be expected that police would be efficient for the purpose, or that convenient receptacles, and sufficiently numerous and skilful veterinary experts would be found. The cost to the ratepayers must also be considered, and it would in all likelihood be out of all proportion to the good effected.

8. A large number of witnesses, with no slight claims to respect, have expressed themselves strongly in favour of universal muzzling for a fixed period (which may be put at twelve months), with a view to the extirpation of the disease; and this would need to be supplemented by quarantine, of a kind amounting in effect to exclusion of foreign dogs, but the exceptions which admittedly must be made would be so large as to impair the efficacy of the restriction. A reference to the number of dogs exempted from the dog license, as stated by Sir A. West (Q. 1691), makes this evident; but, if hounds and other sporting dogs are added to these, the result must be even more adverse to obtaining anything approaching to the universality which is required in order to stamp out Rabies. The evidence in favour of the muzzle is extremely strong, but neither the public nor the dog-owners would readily submit to it, except when the malady was abnormally prevalent, and exceptions would weaken the effect of a general order and cause constant remonstrances. Your Committee, however, are of opinion that the effect of muzzling dogs in London was very beneficial, but under the Metropolitan Streets Acts it was not found possible to enforce the muzzling order, because no penalty exists under that Act, whereas under the Dogs Act, 1871, there is a penalty. Mr. Whitelegg's evidence as to Nottingham lends support to those who favour its extended use. It must be admitted, however, that there are very many who do not consider that the muzzle itself was the effective instrument of checking Rabies; but that the seizure, detention, and destruction of stray dogs, and the unusual care which dog-owners exercised under pressure, were of no little avail in bringing about the diminution of the disorder.

9. In the city of Berlin special regulations are in force. In consequence of a severe outbreak of Rabies in the year 1852, during which 107 dogs were destroyed as rabid, the Royal Police issued a decree, on the 2nd July, 1853, to the effect that all dogs should be provided with a wire muzzle positively preventing the animal from biting, and to empower special persons appointed by the police for that purpose, to seize and destroy all dogs not so muzzled; and when the owner could be found, imposing a fine of 10 thalers (£1 10s.), or a term of imprisonment. In the year following this decree only one dog was killed as rabid, against 97 in the previous year. The decree still remains in force, but does not seem to have been effectual in preventing the recurrence of epidemics of Rabies; for the number of dogs killed as rabid, which up to 1863 had not exceeded in any year 9, rose progressively in the succeeding years, till in 1868 the number reached 66, declining again to 7 in 1870, only to increase in 1872 to 69. In 1875 a law was passed, extending to the whole of Prussia, for the suppression and prevention of animal disease, which provides that all dogs suspected of Rabies shall be immediately killed, as also all animals which it is evident have been bitten by rabid animals; and that all dogs in a district which has been infected by an outbreak of Rabies shall be confined, or when abroad both muzzled and led. The Technical Section of the Veterinary Board in Berlin are of opinion that the passing of this law, and not only the existence of the muzzling order in that

city, is the cause of the extinction of Rabies in Berlin; no case has occurred there since 1883.

10. Stray, ownerless dogs are, no doubt, in most instances the vehicles of contagion, and more effective powers, not only to seize but to slaughter, are desirable.

11. Since 1886 dogs have been brought within the animals subject to Orders of the Privy Council, and there is now in operation an Order of January, 1887, which gives to local authorities very large powers for the regulation and control of dogs. This Order will be found in the Appendix. As these powers are delegated, they, of course, exist in the Privy Council itself, and could be imposed upon, as they are now assigned to the local authorities. There are, however, such great advantages in ensuring the active co-operation of local opinion, that it seems undesirable, except in some pressing emergency, to enforce rather than to allow. We are of opinion that in ordinary circumstances, the local authorities should initiate, but that, if one local authority is crippled by the inertness or opposition of its neighbours, the Privy Council should intervene and extend the area of control and restriction sufficiently to ensure, as far as is practicable, adequate means for the repression of Rabies in that part of the country. In all cases where Rabies is prevalent we are of opinion that the use of the muzzle should be enforced.

12. The Privy Council has been advised that it has not and cannot confer the authority to destroy stray or ownerless dogs. We think, however, that this power ought to exist, and that dogs which are seized and unclaimed for three days should, if it is deemed advisable, be put to death. A penalty is now imposed for concealment of cases of Rabies, and local authorities are bound at once to communicate to the Privy Council every instance of it brought to their knowledge. The law in these cases should be strictly enforced.

13. It is, perhaps, hardly within our function to enter upon a question of the rearrangement of taxation, but it would be of assistance towards the getting rid of stray dogs if the collection and proceeds of the dog license were assigned to the local authorities, charged with the duty of seizure, and, in case of necessity, of slaughter. They would then be vigilant in looking after the tax, and would have their attention constantly called to the dogs within their district. There is a general impression that the number of unlicensed dogs is very great, but Sir Algernon West considers it exaggerated. A plan which has been proposed that every dog should have a metal badge attached to his neck, as a sign that a license has been taken out for him, and that he has an acknowledged owner, might afford a test of its truth. This regulation is said to have been enforced with good effect in Vienna and elsewhere, but it does not appear to have been in force throughout any country. Rabies is more rife in populous districts than elsewhere, and the scheme suggested could be more easily worked in them, as the police, to whom the duty of seizure must be entrusted, are, in such places, generally sufficient for that purpose.

14. Many are of opinion that every dog should be registered, and that the badge should be the mark of registration as well as of license; but there are obvious reasons why this could not be effected without a complete change of the law. At present the license is not for a special dog, but for the owner of a dog, and the licensee may keep as many dogs as he takes out licenses, without reference to the species of any one of them. If he has ten dogs of one description at the beginning of the year, his licenses will avail for ten of a totally different kind if the number in the whole is not exceeded.

15. It might be useful if the local authorities had power to order the use of a badge in their district, which would enable them at once to ascertain the owner of a dog, and to deal summarily with all dogs without it. In dense



populations, indeed, special regulations for dogs are required, quite irrespective of the danger of Rabies, for the protection of the inhabitants, and especially children, who are exposed to great risk, where the streets are their main playground and so many parts of their persons are unprotected. If very stringent measures were authorised and taken against all wandering dogs with no mark by which their owners could at once be found, they would probably lead to a general voluntary use of collars or badges with the name or address of the owner, or some token by which he might be known.

16. Some objections have been raised to the use of the police for the seizure of stray dogs, but we do not see our way to exempt them from this duty, nor to recommend any other body who should be entrusted with the execution of the work. At times, it may be expedient to employ special men for this particular purpose; but even then they should be under police rule, so that two authorities may not clash.

17. Some point has been made of the fact that other animals besides dogs are liable to Rabies, and may be the means of spreading it. We are satisfied, however, that, except in rare instances, the dog has been the cause of disease in man, and though cats and tame foxes may have occasionally done mischief, we see no ground for believing that wild ones have ever in this country communicated the malady to man, or to animals under his charge, as deer, cattle, and sheep, which have frequently so suffered after having been bitten by rabid dogs. The test which can now be applied to ascertain with certainty the presence of disease, should ensure the slaughter of all animals known to have been bitten by a mad dog. If Rabies among dogs were stamped out, we believe that there is little cause for apprehension of its re-introduction by other animals, carnivorous or herbivorous.

18. A foolish notion prevails that a dog which has bitten any one should at once be killed as a means of averting danger. This leads to needless slaughter; but if done, some veterinary surgeon should extract the spinal cord, and send it, after taking proper precautions for its preservation in transit, to the Brown, or other licensed institution, for experiment. In all but the clearest cases, however, it is important that the dog should be carefully isolated, and that some one skilled in canine diseases should see the dog while alive, and advise what should be done with it.

19. We call attention to some evidence as to the blunting of dogs' teeth, but cannot believe that such a measure can be of universal application, though it may be painlessly and usefully applied in certain cases.

20. We annex a note upon foreign regulations, as far as they have come before us, in the Appendix.

21. The Contagious Diseases (Animals) Act of 1886 gives power to the Privy Council to include dogs among the animals to which the Contagious Diseases (Animals) Act of 1878 applies, and in January, 1887, an order was made under that Act, which is generally permissive. It allows local authorities to make regulations for the muzzling of dogs, for the keeping of dogs under control, for providing for the seizure and detention of dogs straying unmuzzled or not under control, and, where dogs are at large and affected with or suspected of Rabies, for their seizure, detention, and, if necessary, slaughter. It makes obligatory that notice of a case of Rabies shall be given to the police that the animal affected shall be isolated, that weekly returns of disease shall be furnished, and that the carcasses of any animals that have died of Rabies shall be destroyed. It will be observed that the law confers no general power upon the police to capture stray dogs, unless they are dangerous, or are found in the district in which, by reason of the existence of Rabies, an order has been made by the local authority, but that the order of the Privy Council permits local authorities to make such a regulation within their district.

22. The general law relating to dogs throughout the United Kingdom is laid down in the Dogs Act, 1871, 24 and 25 Vict. c. 56, which empowers an constable acting on his own discretion, to take possession of any stray dog supposed to be savage or dangerous, and detain it until claimed by the owner, who, if known, shall be informed by letter of the detention. The chief officer of the police of the district may, after the dog has been detained three clear days, if the owner is not known, cause the dog to be sold or destroyed. Courts of summary jurisdiction may make orders directing dangerous dogs to be kept under proper control or destroyed. If a mad dog or a dog suspected of being mad, is found within the jurisdiction of any local authority, such authority may make an order placing restrictions on all dogs not under control for such period as they may think fit, with provisions as to detention and sale similar to the above.

23. In 1867, the assessed tax of 12s. imposed upon dogs was by 30 Vict. c. 5, abolished, and a license duty of 5s. under the management of the Commissioners of Inland Revenue substituted therefor. This Act was amended by the Customs and Inland Revenue Act of 1878, 41 Vict. c. 15, which increases the duty from 5s. to 7s. 6d., but exempts dogs under six months, hounds under twelve months if not used in a pack, blind persons' dogs, and, within certain limits, dogs used solely to tend sheep or cattle.

24. The Metropolis is specially dealt with by the law. Under the Metropolitan Police Act, 1839, 2 and 3 Vict. c. 47, a fine of 40s. may be imposed on any person who suffers a ferocious unmuzzled dog to be at large, or urges it to attack any other dog or frighten any person or animal. Constables may destroy dogs suspected to be rabid or who have been bitten by any rabid or suspected animal, and a penalty is imposed on persons allowing such dogs to be at large. By the Metropolitan Streets Act, 1867, 30 and 31 Vict. c. 134, the police may take possession of and detain any dog not under control, and the Commissioner of Police may issue a notice requiring the dog to be led or muzzled, and may take possession of any dog found loose and unmuzzled, but if a dog wears a collar with an address on it, a letter stating the seizure must be sent to that address. The Commissioners of Police may destroy dogs after detaining them for three clear days. The police are bound properly to feed and maintain all dogs detained.

25. In Ireland, a special Act, Dogs' Regulation Act, 1865, 28 Vict. c. 50, imposes a duty of 2s. for each dog license, with a fee of 6d. for registration. And if a dog be transferred, the new owner need not take out a fresh license; but, on the payment of a fee of 6d., can obtain a certificate that the duty has been paid. And by The Summary Jurisdiction (Ireland) Act, 1851, 14 Vict. c. 92, no person may keep at large any dog within fifty yards of any public road without a muzzle, or else a block of wood fastened to its neck of sufficient weight to prevent the dog from being dangerous. The Justice of the Petty Sessions may issue an order to enable a constable to kill any dangerous dog so kept; and in the district of the Dublin metropolis, any dog suspected to be in a rabid state, or which has been bitten by an animal so suspected, may be destroyed.

26. In conclusion, we desire to express our opinion that, with some amendments suggested above in the powers conferred upon the Privy Council, and, through them, upon local authorities, the danger of Rabies may to a great extent be met, and that the exercise of those powers must be guided by the exigencies as they arise. The time may come when the public will call upon the Privy Council to act on its own authority throughout the kingdom, but without that sanction it seems prudent to leave to local authorities the initiation of necessary measures.

27. The recommendations of your Committee may be recapitulated as follows: 1, That when Rabies is prevalent the muzzle should be enforced; 2,



That the power of the police constable should be extended to authorise the slaughter of stray dogs; 3, That the symptoms of Rabies should be endorsed on dog licenses; 4, That local authorities should have power to order that dogs should wear badges which may identify their owners; 5, That in populous places local authorities should place restrictions upon dogs generally, and especially deal stringently with apparently ownerless dogs in their districts; 6, That in the event of its being conclusively proved that M. Pasteur's system provides a preventive remedy, facilities should be afforded for its application in England.

### HER MAJESTY'S JUBILEE.

THE following reply has been received from the Home Secretary's Office, to the address presented to Her Most Gracious Majesty by the Royal College of Veterinary Surgeons:—

Whitehall, Aug. 3rd, 1887.

SIR,—I have had the honour to lay before the Queen the loyal and dutiful Address of the Royal College of Veterinary Surgeons on the occasion of Her Majesty attaining the Fiftieth Year of Her Reign. And I have to inform you that Her Majesty was pleased to receive the same very graciously. I have the honour to be, Sir, your obedient servant,

(Signed) HENRY MATTHEWS.

Sir Henry Simpson, Gordon House, Windsor.

## Proceedings of Veterinary Medical Societies, &c.

### ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JULY 28TH, 1887.

SIR HENRY SIMPSON, President, in the chair.

*Present*:—Professors McCall, Pritchard, Duguid, Brown, Walley, Robertson; Messrs. Dray, Roalfe Cox, Harpley, Fleming, Taylor, Woods, Barford, Mulvey, J. F. Simpson, Whittle, Briggs, Wragg, Santy, Storrar, Carter, Simcocks, and the Secretary.

Before taking his seat, the PRESIDENT announced that Mr. Greaves had kindly presented the College with a presidential chair, and he thought that before it was occupied for the first time, the Council would wish in some way to acknowledge their indebtedness to Mr. Greaves.

On the motion of Mr. DRAY, seconded by Mr. WHITTLE, a vote of thanks was passed to Mr. Greaves for his liberality.

The President then took the chair.

The SECRETARY read the notice convening the meeting.

Letters regretting their absence were announced from Mr. Perrins, Mr. Campbell, Mr. Greaves, and Sir Frederick Fitzwygram.

The minutes of the last quarterly meeting were taken as read, as were also the minutes of a special meeting held on July 14th.

The following donations to the library were announced—

*Revue Vétérinaire*; "The Annual Report of the Agricultural Department of the Privy Council Office," presented by Prof. Brown; a pamphlet on "Surra; or, Progressive Pernicious Anæmia," and a "Report on Remittent Anthrax," presented by Mr. R. W. Burke, of the Army Veterinary Department; "The Annual Report and Statistical Returns of the Army Veterinary Department," presented by Dr. Fleming.

Mr. DRAY proposed a vote of thanks to the donors.

Mr. WOODS seconded the motion, which was agreed to.

The SECRETARY read the correspondence—

(1) A reply from a Mr. Eaves, relating to the Registration Act. It was decided to take no action with regard to it until a promised second letter was received.

(2) A syllabus of the College in Bombay, sent by Mr. Steel.

The SECRETARY announced that on behalf of the Midland Counties Veterinary Medical Association Mr. Blakeway had, through Mr. Dray, presented the College with a cheque for £50.

On the motion of Mr. TAYLOR, seconded by Mr. DRAY, a vote of thanks was passed to the Midland Association for their handsome present.

The PRESIDENT stated that the address to the Queen had been sent to the Home Office. He had tried to get permission for a deputation to present it to Her Majesty in person, but of about five hundred applicants only thirty were allowed that privilege. In view of the possibility of a deputation being admitted, he had ventured to put the College to the expense of a guinea for a casket in which it might be handed to the Queen.

The SECRETARY read a letter from the Liverpool Veterinary Medical Association, forwarding a resolution passed at the last quarterly meeting, to the effect that the Association supported the Council in its determination to appoint an independent Conjoint Committee to make a thorough investigation as to the cause of the recent riots in Edinburgh.

The PRESIDENT said no such resolution was come to at the last meeting of the Council.

The communication was referred to the Examination Committee.

A letter was read from the Secretary of the North of England Veterinary Medical Association, enclosing a copy of certain resolutions, recommending that the number of Examiners should be increased to at least two for each subject, and that as far as possible each Examiner should be a specialist on the subject in which he examined.

A similar letter was read from the Border Counties Veterinary Medical Association.

Both communications were referred to the Examination Committee.

The PRESIDENT said that at the last meeting a hurried resolution was passed to have a wire gauze put in front of the stained glass window, but it was impossible to get it done before the Jubilee. He thought it would be better to pay a small sum for insurance, which could be effected for 18s. annually, rather than have the windows disfigured by wire gauze.

On the motion of Professor WALLEY, seconded by Mr. DRAY, the resolution passed at the last meeting was rescinded, and it was decided to insure the windows.

#### *Report of the Finance Committee.*

On the motion of Mr. DRAY, seconded by Mr. WHITTLE, the report of the Finance Committee was received.

Mr. DRAY said that two guineas had been received from Mr. B. J. Burnett, of Maybole, who in his letter stated that he intended to give an annual subscription to the same amount.

The motion for the adoption of the Report was agreed to on the motion of Mr. DRAY, seconded by Mr. WHITTLE, and cheques were ordered to be drawn to meet the liabilities.

#### *Report from the Court of Examiners.*

The SECRETARY read the Report of the Court of Examiners. For the first examination in London, fourteen passed and thirteen were rejected; for



the second, fifteen passed and four were rejected ; in Class A thirty-five passed and fourteen were rejected.

Mr. SIMCOCKS asked what proofs were produced by those who passed the final examination of their having passed matriculation examinations.

The PRESIDENT said the matriculation examinations rested with the schools.

Professor McCALL said for the first time at the recent examination the "A" students had to table their certificates before going in for their examination.

The SECRETARY read the report of the Examiners for the Fellowship degree.

Dr. FLEMING said that the gentlemen who had passed did so remarkably well, and he did not think the Examiners were ever more gratified with an examination ; the high scientific knowledge of the candidates was very creditable.

The PRESIDENT said the Reports of the Examinations in Scotland had not been received. In pursuance of a duty imposed upon him by the rules of the College, he went to Edinburgh for the purpose of superintending the examinations, and on the whole he felt extremely gratified with what he saw. He took a look round the teaching schools, and was received most graciously by the principals. He had an opportunity of seeing some of the students, and tried to impress upon them the desirability of their endeavouring to fix their own mark upon the profession which they were about to enter, and to make it a rising and scientific profession. He was happy to say that the conduct of the students was exemplary, and he hoped it would remain so. He also had a very earnest conversation with the Lord Provost, and he felt sure that there was no desire on the part of the Lord Provost of Edinburgh to move in the matter of a new Charter for Scotland.

Dr. FLEMING assured the Council that the examinations this year were conducted in Scotland exactly as they had been for years, there being nothing whatever unusual.

The PRESIDENT said that during the whole course of his visit he never heard the slightest semblance of an unfair question asked.

*Examiners for the Fellowship Degree.*

Dr. Fleming, Mr. J. Roalfe Cox, Professor Duguid, and Professor Brown, were nominated Examiners for the Fellowship degree.

Professor BROWN asked whether the time had not arrived when the desirability of extending the scope of the examinations should be carefully considered. A Fellow of the Royal College should afford some sort of guarantee that he was competent to hold an inquiry into an outbreak of the disease, having at his hands all the modern methods of investigation. Science was not now what it was four or five years ago, and questions were constantly arising which could only be settled by a man who was a practical microscopist, to say the least. The term "fellowship" ought not to be restricted to the simple notion of experience and practical tact and knowledge of animal diseases ; but a person holding that title should be recognised as a man who might be safely employed in a critical inquiry.

Dr. FLEMING said the subjects of examinations were fixed. Of course the scope of the examinations which Professor Brown proposed was a very extensive one, and he questioned very much if there were any practitioners in the country who would really undertake the study necessary to pass such an examination. The Council could extend the subjects if it chose, but he thought the groundwork of the present examination was a very good one, and so far as his own section was concerned, it made a very exhaustive one. If the examination was fixed too high it would become prohibitive, but when

the degree was established it was intended to be progressive. He knew good practitioners who had studied their profession from a scientific point of view, and who were anxious to become Fellows; but if a man were required to be examined very minutely into the outbreak of disease with regard to its chemical or its histological aspect, he was afraid the Fellowship degree would be ruined altogether.

The PRESIDENT thought there was nothing whatever to prevent the subject of the Fellowship Examination coming before the Examination Committee, which this year consisted of the whole Council.

Professor BROWN quite agreed with Dr. Fleming as to the Fellowship Degree being progressive; that was all he aimed at.

A ballot was then taken for the Examiners for the Fellowship degree, with the following result:—Professor Duguid, 13; Dr. Fleming, 12; Mr. J. Roalfe Cox, 10; Professor Brown, 7.

The PRESIDENT declared the first three elected.

The SECRETARY read a letter from Professor Walley, giving notice that at a quarterly meeting of the Council he would put certain questions.

The PRESIDENT moved that the letter be referred to the Examination Committee.

Mr. DRAY seconded the motion, which was agreed to.

Dr. FLEMING proposed the name of Dr. Huidekoper, of the University of Pennsylvania, as an Honorary Associate of the College.

Professor WALLEY seconded the motion, which was agreed to.

#### SPECIAL MEETING.

The SECRETARY read the notice convening the meeting.

The SECRETARY read the obituary.

Mr. J. SIMPSON called attention to the case of a Mr. Brooker, who was a member of the College about six years ago, but after being in practice for about twelve months he went out of his mind, and his brother had carried on the practice, and issued labels with the letters M.R.C.V.S., that brother being neither a member of the College nor a registered practitioner. It appeared to him that that was a case which the Secretary might very well bring before the Registration Committee at the next meeting.

The PRESIDENT said the Secretary could do that without a formal resolution.

#### *Revision of Bye-laws.*

Bye-law 1 was, on the motion of Mr. MULVEY, seconded by Mr. SIMCOCKS, left on the Examination Committee.

Bye-law 2, on the motion of Mr. J. SIMPSON, seconded by Mr. WHITTLE, was expunged.

Bye-law 3 was passed.

Bye-law 4 was passed with a verbal alteration.

Bye-law 5 was agreed to.

Bye-law 6 was passed with a verbal alteration.

Bye-laws 7 and 8 were passed.

Bye-law 9 was passed with a verbal alteration.

Bye-laws 10, 11, 12, 13, 14, were passed.

On Bye-law 15 Mr. SIMCOCKS said he thought that twenty members of the College were not sufficient, and he proposed that "fifty" should be inserted instead of "twenty."

Mr. MULVEY seconded the motion, which was lost, and the bye-law was agreed to.

Bye-laws 16, 17, 18 and 19, were agreed to.

On Bye-law 20 Professor WALLEY proposed the addition of the following words:—"That no Examiner shall act in any section save one."



Professor ROBERTSON seconded the motion, which was ultimately withdrawn, it being understood that it would come on better upon the consideration of Bye-law 22, and the bye-law was then passed.

Bye-law 21 was passed.

On Bye-law 22 Professor WALLEY moved :—"That no Examiner shall act in more than one class."

Professor ROBERTSON seconded the motion.

Mr. PETER TAYLOR suggested that the alteration had better be considered by the Examination Committee.

Dr. FLEMING said that if each Examiner was only allowed to take one section the expenses would be increased. The object of Examiners acting in more than one class was to make the fees of the students cover the cost of the examination.

Professor WALLEY said he was willing that the consideration of the bye-law should be postponed until the next meeting.

Professor MCCALL agreed with Dr. Fleming that it would be very injudicious to create any new system of Examiners which would entail larger responsibility and expense on the College, but that was a point which could easily be got over. There were not so very many honourable positions in the profession, and it ought to be considered a great honour to be appointed an Examiner ; and if by incurring the same expense the College could have a body of twenty-two Examiners as efficient as the present Examiners, he was certain it would give great satisfaction to the whole of the profession. He would like the byelaw to read as follows :—"Not less than eleven shall be members of the Council."

Professor WALLEY said he would be very pleased to add Professor McCall's suggestion to his motion.

Professor BROWN thought it would be rather a strong measure to bind themselves down to eleven.

Professor MCCALL withdrew his suggestion.

Dr. FLEMING thought they had better defer the consideration of this bye-law until they had received the report of the Examination Committee.

Mr. PETER TAYLOR seconded the motion.

Mr. J. SIMPSON was opposed to any postponement of the discussion.

Professor BROWN moved as an amendment, "That the bye-law stand as it is, but that the last sentence be expunged."

Dr. FLEMING said he would withdraw his amendment, and second Professor Brown.

Professor Brown's amendment was then put and carried.

Bye-laws 23 and 24 were passed.

On Bye-law 25 Professor MCCALL said that a Board of Examiners had been required for three weeks in Scotland, and he thought there should be some definite time fixed.

Professor ROBERTSON understood that there was a fixed time for examination in London, namely, the last week in June. He thought there was nothing more detrimental to the students than to have to wait ten or fourteen days for the examination.

Mr. J. ROALFE COX said the special weeks were fixed.

Professor MCCALL said if the subject were taken up and decided at the next meeting he would be very glad indeed.

Dr. FLEMING said it must not be forgotten that unless there were nine students for examination there was no Board. He thought the question raised could be settled by rule.

Professor MCCALL said he could not see any objection to inserting the words, "If the College require."

Professor ROBERTSON approved of the suggestion. He regarded it as a matter of consultation.

The PRESIDENT said the Committee had come to a recommendation, "That the Christmas Examination commence on Tuesday, 8th December next; that Monday in the next whole week in March be fixed as the day for the examinations to commence in London, and in Scotland the second Tuesday in April." That would seem to show that there was a conference and that the date was fixed. He did not think that a new law was required. All that was wanted was to put the existing law in force.

Professor PRITCHARD wished to know if a pupil desired to be examined at any period of the year, and was inclined to pay the fees of the Examiners, could he demand an examination?

The PRESIDENT said he could not. The words were, "such time as the Council may appoint."

Dr. FLEMING said there must be nine candidates.

Mr. MULVEY said he would propose a new bye-law, "That no individual member of the Court of Examiners shall act on more than one section of the Board."

The PRESIDENT said if it was a new bye-law it must be suspended for three months.

Mr. MULVEY said he would suspend it.

Bye-law 26 was passed.

On Bye-law 27, Dr. FLEMING proposed that the words should run, "Pass such number of examinations as may be considered necessary."

Professor BROWN proposed to leave the bye-law out altogether. It was too restrictive.

Mr. SIMCOCKS seconded Professor Brown's motion.

Dr. FLEMING withdrew his motion, and Professor Brown's was then carried.

Bye-laws 28, 29, 30, 31, 32, and 33, were expunged on the motion of Professor BROWN, seconded by Dr. FLEMING.

On Bye-law 34, Professor BROWN said it would come better among the Rules and Regulations.

Mr. J. F. SIMPSON thought that the Council should certainly have a voice in the decision as to what age a man should be admitted into the veterinary profession, and he would propose that the bye-law remain.

Mr. J. F. SIMPSON thought that the word "completed" should be added to the bye-law, so that it should run, "That no student be admitted to the final examination for the diploma of the Royal College of Veterinary Surgeons until he shall have completed his twenty-first year."

Professor WALLEY moved that the bye-law as far as the age was concerned should remain as at present.

Dr. FLEMING said that if the Council once asserted that a man might be competent to practise the veterinary profession when he was twenty years of age, they would at once acknowledge that their profession was easier than the medical profession, but he said it was more difficult.

The bye-law as amended was agreed to.

Bye-laws 35 and 36 were, on the motion of Professor BROWN, seconded by Dr. FLEMING, expunged.

On Bye-law 37 Professor BROWN proposed that the words, "After they have passed three successful examinations," should be struck out, and the following words inserted, "After they have passed the final examination."

Professor ROBERTSON seconded the motion, but the motion was subsequently withdrawn.

The PRESIDENT read a proposed alteration in the bye-law by the solicitor, and the bye-law with that alteration was carried.

On Bye-law 38A, Professor MCCALL said he did not see any necessity for the students requiring to petition the College. He also objected to the charge



of four guineas, and would propose that it should be three guineas, out of sympathy for the unfortunate students' parents.

Mr. WHITTLE seconded the motion.

Professor ROBERTSON did not think there was any need for the bye-law, except to fixing for the ordinary examination.

Mr. J. SIMPSON proposed that the fee should be four guineas. He thought that men should not be allowed to get into the profession as cheaply as they could learn the trade of a carpenter.

Mr. DRAY seconded the motion, which was put and lost, and the original motion was then carried.

Bye-laws 38, 39, 40, 41, 42, were expunged on the motion of Professor BROWN, seconded by Mr. PETER TAYLOR.

Bye-law 43 was adopted as proposed by the Bye-laws Committee.

Bye-law 44A was agreed to with a verbal alteration, so that it might read, "In accordance with the provisions of the Veterinary Surgeons Act."

On Bye-law 44, Professor BROWN proposed that it be expunged.

Professor ROBERTSON seconded the motion.

Mr. J. SIMPSON proposed as an amendment, "That the bye-law stand as it is."

Mr. CARTER seconded the amendment, which was carried by the casting vote of the Chairman.

Bye-laws 45 and 46 were passed.

On Bye-law 47A, Professor WALLEY moved, "That it be not adopted."

Professor McCALL seconded the motion.

Mr. J. SIMPSON proposed as an amendment, "That the suggested new bye-law be passed."

Dr. FLEMING seconded the amendment, which was lost; and the motion was passed.

Bye-law 47 was passed with the substitution of the word "person" instead of "student," and "he" instead of "medical gentleman."

Bye-law 48 was passed.

Professor BROWN proposed, "That all bye-laws which have been struck out at this meeting between 20 and 48, relating to the examination of pupils, be referred to the Examination Committee for the purpose of considering whether or in what way they may be embodied, either altered or not, in the Rules and Regulations."

Professor WALLEY seconded the motion.

The PRESIDENT said it all must be arranged before the quarterly meeting in October. He would try and get the rules sent round to each member of the Council.

Professor BROWN suggested that there might be a small committee to consider all these details.

The PRESIDENT thought that perhaps a small committee might have a bias.

Professor BROWN proposed, "That a sub-committee of members be appointed who might meet and draw a set of rules." Those rules might then be submitted to all the members of the Council, and sent back and reconsidered by a small committee, and when thoroughly discussed they might be submitted to the whole Committee.

Mr. WRAGG seconded the motion, which was agreed to, the Committee to consist of the President, Professor Brown, Dr. Fleming, Professor Robertson, Mr. James Simpson, Mr. Wragg, Professor Pritchard, and Mr. Mulvey.

Bye-law 49 was passed with a verbal alteration.

Bye-laws 50, 51, 52, and 53, were passed.

Bye-law 52A was passed with verbal alterations.

Bye-laws 52B, 54, 55, 56, 57, 58, 59, 60, 63A, were passed.

On Bye-law 63 the PRESIDENT said the solicitor reported that the Council had no power to make such a bye-law.

On the motion of Professor WALLEY, seconded by Mr. WHITTLE, the bye-law was rejected.

Bye-laws 64, 65, 66, 67, 68, 69, and 70, were passed.

Bye-law 71 : The consideration of this bye-law was adjourned.

Bye-laws 72, 73, 74, 75, 76, and 77, were passed.

On Bye-law 71, Mr. J. SIMPSON said he found that 500 Registers had been printed at a cost of £45 18s. If the printer had been in the habit of sending a certain number of Registers to the College for the use of the Council and had retained others for sale, some credit should appear for those that had been sold.

The SECRETARY said he thought the publishers had sold something like £16 worth during the year.

Dr. FLEMING suggested that the subject be referred to the House and Finance Committee.

The PRESIDENT said the Register last year cost £30, and he really thought if they wanted 500 copies they should be kept at the College, to be obtained on application to the Registrar.

This was agreed to, and the bye-law as altered was passed.

Mr. SANTY placed before the Council two designs for a window. The Norfolk and Eastern Counties Veterinary Medical Association and the Lincolnshire Western Counties Association wished the Council to decide which design it approved of.

On the motion of Mr. J. SIMPSON, it was decided to have a list of the members of the Council and of the Committees printed and circulated amongst the council and the chairmen of the veterinary medical societies annually.

Mr. WHITTLE proposed, and Professor WALLEY seconded, a vote of thanks to the Chairman, which was agreed to.

#### NATIONAL VETERINARY ASSOCIATION AT PETERBOROUGH.

PETERBOROUGH having been chosen for the 1887 meeting of the National Veterinary Association, the meeting was held in the Theatre, Park Road, on August 10th and 11th. The president of the society for the year was Mr. J. Mackinder, F.R.C.V.S., of Peterborough. Accompanying the meeting was an exhibition of medicines and appliances, etc., used in veterinary practice, and this was held in the first half of the theatre, and created much interest. The conference opened at ten o'clock on the 10th, when there was a large number of delegates from London, Grantham, Doncaster, Sleaford, Market Harborough, and representing various counties, Lancashire, Leeds, Midland, North Eastern, Yorkshire, Norfolk and Eastern Counties, the Southern Counties, West of Scotland, North of Ireland, etc.

The report and accounts having been read and adopted, Mr. J. MACKINDER delivered

#### *The President's Address.*

During his address he said that he could not claim for Peterborough the distinction his predecessor in the office did for Edinburgh in its relation to the profession, but he could say that it was the centre of a district noted for the excellence of its horses, the truth of which none would doubt who had visited the shows held yearly in its precincts. But for all that he sincerely trusted that the results of the meeting would not fall short of any previous one, and in the name of the veterinarians of this city and district he bid them welcome. (Applause.) Many members of the profession seemed to doubt the desirability of joining any of their local veterinary medical associations. He would point out to them that we were living in an age of combination. There was no trade or profession that had not endeavoured by



congresses, etc., to discuss questions relating to their particular calling in life, remembering that in the multiplicity of counsel there was wisdom. (Hear, hear.) How many day by day did not see cases upon which they should welcome an interchange of ideas with their fellow practitioners? For many years there seemed a feeling of hesitation and a kind of doubting their brethren in the profession, and had not the different associations done much to remove this feeling and join them together in new ties, so that they might look at their diplomas and seeing the motto, "Vis unita fortior," feel that by this meeting they were making that motto a reality and not a sham. (Applause.) In taking a retrospect the President remarked upon the splendid results brought about by such gatherings. Twenty years ago it was said by a member of the Government that very little seemed to be known as to contagious diseases. At one time Pleuro-pneumonia was one of the most common diseases, now, although the disease has not been stamped out in many localities (due in his opinion to the lax way the law was carried out), in this district a case of the kind was one of the most rare they had to do with. Foot-and-mouth Disease they were first told was impossible to be stamped out. Now the country was entirely free, providing that what the veterinary profession recommended as a body could be carried out. Sheep-scab was now a rarity, where formerly it was very prevalent. Glanders and Farcy were now only prevalent in the larger towns, where it prevailed owing to the obstruction by low-class dealers and bad sanitary arrangements of stables. Swine-fever was one of the diseases they were now coping with, and he was sure if the legislative enactments were carried out properly by all local authorities it would soon disappear. (Hear, hear.) Speaking of Anthrax, the President said it would greatly simplify matters if the local authorities in publishing orders, placed in the margin the name it was locally known by, otherwise it was mistaken for a new disease. He believed inoculation not practicable (hear, hear), and thought power should be given to a qualified veterinary inspector to slaughter all beasts he might consider liable to the contagion, giving the owner full compensation. In Rabies they ought not to be led by a false idea of cruelty (hear, hear); but it must be compulsory on all local authorities to order all dogs to be muzzled. A certain class of people might cry out against it, but were the public at large to suffer on account of sentimental persons having pet dogs, whose comfort they considered before the lives of their fellow creatures? (Applause.) He again extended to the delegates a hearty welcome to the city of Peterborough.

#### *The Conferences.*

The outcome of the first discussion on the morning of the 10th, was the selection of Newcastle-on-Tyne for the next annual meeting. Mr. Wragg was re-elected treasurer, and Mr. J. A. Banham, Cambridge, secretary. Mr. Banham read an essay on "Shoeing," the discussion upon which was opened by Mr. W. Hunting in an address of some length. Mr. Barker, Mr. McGagin, Mr. Rutherford, Mr. Edgar, and Prof. Walley took part, and the subject was adjourned until after luncheon. This was admirably served in a marquee at the rear of the Pavilion Hotel. Captain Hayes, London, afterwards gave a practical illustration of different methods of training horses and getting them under complete control. He operated with success on an unbroken colt which had never been backed, and was returned as incorrigible after being a fortnight at the breaker's. On the resumption of the conference, Mr. Kidd re-opened the discussion, and he was followed by Prof. McQueen. Mr. Banham replied upon the debate. Mr. Hardy proposed a vote of thanks to Mr. Banham, which was seconded by Mr. Barford, and carried. Professor Walley then introduced a paper on the best method of despatching horses, and discussed the various systems of chemicals, poleaxing, pithing, and bleeding, and concluded in

favour of shooting. Capt. Russell, of Grantham, opened the discussion, and it was continued by Prof. McGill, Messrs. Hunting, Rutherford, and F. Smith (Army Vet. Dept., Aldershot). Prof. Walley replied. The following resolution was unanimously agreed to: "That only properly qualified and experienced men should be allowed to take the life of horses, and that death by gunshot is deemed the most efficacious and merciful mode of despatch." Mr. Santy, of Norwich, moved a vote of thanks, which Capt. Russell seconded, and it was carried. This closed the day's conference. The delegates met again on the morning of the 11th in the Theatre, under the presidency of Mr. J. Mackinder. There was a good muster. Amongst the questions upon the agenda for discussion were, "Fatal Diseases of the Digestive Canal of the Horse," by Mr. F. Smith, A.V.D., the discussion being opened by Mr. R. Rutherford; and "Overstocking the Udders of Cows and Dishorning of Cattle," by Professor Walley. The discussion was opened by Mr. W. A. Edgar. The routine business of election of officers, etc., was proceeded with. One of the events of the meeting was the election of Professor Walley to a vice-presidency for life. The President paid a tribute to the intellect of the Professor, and the election was received with enthusiasm. Professor Williams, of Edinburgh, was unanimously elected the new president.

#### *The Dinner.*

In the evening the dinner of the Association was held at the Angel Hotel. The President occupied the chair, and the Mayor, several of the local magnates and medical men, and a large number of the members of the Association, were present.

Among the exhibits made during the meeting, Messrs. Arnold and Sons, of London, had a tastefully set out collection of all the latest inventions in veterinary instruments and appliances, amongst which were the following novelties:—

Dr. Fleming's new veterinary battery, with four Léclanché cells for treatment of Roaring, similar to one being used on the Duke of Westminster's Ormonde; Pasteur's new trephine, with a series of drills for inoculation; Prof. Robertson's neurotomy case; miniature needle holder, for facilitating the introduction of needles; new apparatus for producing anæsthesia per rectum; Brett's improved ecraseur, with brass cup for vaseline which renders the screw always easy to work; Prof. Robertson's revolving pyropuncture iron, constructed so that any number of points may be heated and used; intra-tracheal injection syringe, for the cure of lung-worm, etc.; patent hypodermic syringe, with self-lubricating plunger; collection of clinical thermometers, parturition instruments, etc.

#### CENTRAL VETERINARY MEDICAL SOCIETY.

THE meetings held on the 5th May and the 2nd June were occupied by the reading and discussion of an essay introduced by Mr. F. Raymond, A.V.D., on the subject of chloroform.

The following Fellows attended: Messrs. A. Broad, J. Broad, Arthur Broad, J. Roalfe Cox, F. Elworthy, W. Hunting, W. S. Harrison, G. A. Herron, T. Moore, F. T. Oatway, Professor Pritchard, James Rowe (President), F. Raymond, W. Roots, W. Irwin Roberts, F. G. Samson, J. F. Simpson, C. Sheather, J. Woodger, F. W. Wragg, and W. Willis.

The following is the essay:—

MR. PRESIDENT AND GENTLEMEN,—In bringing the subject of chloroform as an anæsthetic to your notice, I do so on account of the comparative poverty of its veterinary literature, and also because ample time has passed since



Professor Williams' and Mr. Roberts' most interesting publication on the agent.

Doubtless many of the suggestions which were made at that meeting of the National Veterinary Medical Society have been acted upon, so that I venture to entertain a hope that the Fellows will place on record, during the discussion, many new and interesting facts which have come to their notice since Professor Williams' and Mr. Roberts' paper was read.

The history of Anesthesia dates very far back, for there is reason to believe that the ancient Egyptians used Indian hemp for the purpose. As history approaches us we occasionally hear of the employment of some drug for the purpose of narcosis or to deaden pain.

Thus in Christ's time mandragora wine was given to criminals to deaden the agony of crucifixion, and later on in Dante's period a few Italian surgeons are reported to have caused anesthesia by inhalation from a preparation of deadly nightshade, hyoscyamus, mandragora, and hemlock.

During the commencement of the eighteenth century one of the kings of Poland was narcotized to undergo an amputation; and so on until 1799, when Sir Humphrey Davy hinted at the advantage which might accrue from the use of nitrous oxide. This brings us down to 1844 when Horace Wells, an American dentist, administered ether successfully. In 1847 Mr. Jacob Bell substituted chloric ether for sulphuric ether.

Chloric ether is practically a solution of chloroform in spirits of wine.

But it is interesting to notice that while scientists were carefully feeling their way, the ignorant peasants on the Continent, particularly in Norway, had made themselves acquainted with the anesthetic properties of a class of somewhat similar compounds found in ants, namely, the "Formyle" compounds. Dr. Sansom states:

"I have heard of crushed ants having been employed to allay local pain.

"In Norway the common beverage of the lower classes was in former years spirit, in which a large bag of large white ants was boiled and left to simmer.

"The effect of this drink was rapidly to produce a delightful dreamy condition, which soon passed into complete unconsciousness, from which it was impossible to rouse the tippler. In the course of an hour or two the individual recovered, and was found to be perfectly clear-headed, without headache or other discomfort. Surgeons were accustomed to perform operations upon those whose sensibility to pain had thus been removed."

I myself recollect some years ago seeing an old woman some miles from Berlin collecting ants and putting them in a bottle with vinegar and water. I was told the lotion was good for sprains.

The list of anesthetics is a very long one, comprising more than fifty agents, but I wish to draw your attention more particularly to chloroform.

*Chloroform.*—The French chemist Dumas, I believe, was the first to recognise the true nature of chloroform, but about the time he did so Mr. Waldie, of the Apothecaries' Hall, Liverpool, separated chloroform from chloric ether, and Sir J. Simpson was the first to administer it in surgery in 1847. Chloroform is generally prepared by the distillation of alcohol with chloride of lime. When pure, it is a transparent colourless fluid, with a penetrating odour, and sweet fiery taste. It decomposes when exposed to air and light, forming chlorine and hydrochloric acid, and becomes unfitted for inhalation. Great care should therefore be taken to keep it in a coloured bottle, well stoppered. It is very necessary that none but pure chloroform should be used. Dr. Turnbull states that commercial chloroform has become much less reliable and more dangerous of late years. Too much importance cannot be given to this part of the subject, as impure chloroform will sometimes not act, and at others has nearly caused death. It also gives rise in the human subject, and

probably also in the lower animals, to great distress, such as headache, vomiting, extreme exhaustion, and so on.

I hope, therefore, I may be allowed to enlarge somewhat upon the impurities of the drug. The principal impurities are alcohol and ether, which reduce its strength; methyl compounds, resulting from the employ of methylic instead of rectified spirit in distillation; and, thirdly, the products of decomposition.

To test for alcohol, add a drop or two of the suspected chloroform to white of egg. If alcohol is present the albumen coagulates; if the chloroform is pure no change takes place. This test will detect 2 or 3 per cent.

If pure chloroform be allowed to drop into distilled water there is no disturbance of the transparency of the water, but if it contains alcohol the water becomes milky.

To test for ether, drop some of the suspected chloroform into an aqueous solution of iodine. If the chloroform is pure, the drop remains transparent, or of a violet or amethyst colour. If it contains ether, the drop is coloured dull red.

To test for methyl compounds, add to the liquid, concentrated sulphuric acid; if impure a black precipitate is thrown down.

I have already hinted that the most dangerous products of the decomposition of chloroform are chlorine and hydrochloric acid. Hydrochloric acid may be detected with blue litmus, which it turns red, and by solution of nitrate of silver, which causes a precipitate. Free chlorine may be discovered by its smell; it also bleaches litmus.

Chloroform acts far more powerfully when inhaled, than when poured into the stomach. When it is inhaled, it becomes absorbed by the capillaries of the lungs, goes to the left side of the heart, and thence into the general circulation; but when taken into the stomach it passes through the portal system, thence through the vena cava to the right side of the heart, then to the lungs, where the greater part is exhaled. What remains returns to the left side of the heart, and through it into the general circulation.

Therefore, as Lyman points out, the production of anesthesia by chloroform in a fluid state is slow and uncertain. Taylor, in his work on poisons, mentions the case of a man who swallowed four ounces of chloroform and recovered in five days.

In administering the vapour of chloroform it should be borne in mind that it has a local as well as a general effect, and no doubt considerable discomfort may be produced by allowing the liquid to fall upon the mucous membrane of the nostrils.

There is an interesting question connected with the administration of chloroform, upon which I am anxious to take the opinion of the meeting. It is as follows:—In administering chloroform, is it better to give the vapour without air as recommended by Mr. Roberts, or to give it with air?

The late Paul Bert, who experimented largely with the agent upon dogs, found that if submitted to the vapour of six grammes of chloroform in 100 litres of air, the animals died slowly in about seven hours and a half; sensation was not lost, but enfeebled. If stronger doses were given, say ten grammes to 100 litres, death was rapid. The general conclusion he appears to have arrived at is, that 100 litres of air must contain the vapour of fifteen grammes of chloroform to produce anesthesia, and of thirty grammes to produce asphyxia.

Lyman, the American chloroformist, says:—"A knowledge of these facts renders it easy to comprehend the manner in which death has often been observed as the immediate consequence of a fresh charge of chloroform upon the inhaler. If the patient has been breathing air charged with chloroform in the proportion of 25 grammes to 100 litres, a very small addition will be



necessary, in order to reach the asphyxiating point, and death may occur suddenly without any accompanying symptoms of excitement, because all power of muscular movement has been effectually abolished by the previously established condition of profound anesthesia."

Some time ago, a Committee of the Royal Medical and Chirurgical Society carried out some experiments, with the following results:—

If concentrated chloroform vapour was suddenly administered by the mouth, a spasm of the fauces is induced, which lasts some seconds; afterwards, when the animal has inspired, the phenomena of asphyxia are for a time associated with those of chloroform poisoning. If partial insensibility be first induced by weaker chloroform, no spasm of the fauces ensues upon a later administration of the concentrated form of the agent.

Dr. Sansom's opinion is as follows:—

"(1) In all cases of experiments upon animals, the symptoms of anesthesia have been induced in the most regular, uniform, and safe manner, when fully diluted vapour has been administered.

"(2) In experiments upon the condition of the circulation in narcosis, we have always found highly charged atmosphere cause great trouble of the capillary circulation, whilst diluted atmosphere has, as it were, allowed the gradual accommodation of the system to the new state."

We know by practical experience that an atmosphere strong in chloroform vapour causes in the human subject phenomena of resistance, and the most apparent signs of danger.

He goes on to say: "In the human subject I have found that if the inhalation be commenced with so small a proportion of chloroform that the patient can recognise in it nothing unpleasant, and if this proportion be gradually increased, there is the most perfect absence of signs of danger, and of muscular excitement.

"Commence the inhalation gradually; recollect that any sudden increase in the strength of the vapour can produce sudden syncope."

We have considered that the means to be adopted to diminish and nearly abolish the danger of chloroform are (1) free dilution; (2) gradual administration.

Professor Underwood remarks: "The essential element of safety during inhalation of chloroform is that it should never be administered above a certain strength. To experiment, therefore, with a saturated atmosphere is simply to experiment with a poisonous dose. Chloroform is not specially dangerous unless given with too little air, when it may suddenly depress the heart."

It will be gathered from what I have quoted that strong chloroform vapour is never used in human surgery. In my opinion, which I give for what it is worth, having never had the courage to use concentrated vapour, it is equally dangerous in our practice. On the other hand, we have the evidence of Mr. Roberts, which I quote below, and which must be received with great respect, for it must be borne in mind that his recommendations are based upon actual practical evidence.

Mr. Roberts states:—"The plan that I have followed is, first, to secure the horse's head, having a good halter on each side, securely fastened, so that he cannot slip them off. A good strong assistant, having hold of each halter, is necessary, as, during the period of excitement, the animal may be rather boisterous, and, if not securely fastened, may get away. I then place the nosebag, containing a sponge, on the horse's nose. This is fastened by a strap, which passes over the horse's head, the same as an ordinary muzzle. The nosebag itself has no holes punched in it for the admission of air. When this is done, I pour into the nosebag two ounces of chloroform, and immediately plug up the space around the top of the nosebag and the horse's

face, thus preventing, as much as possible, the admission of air. In Mr. Finlay Dun's work it is recommended that twenty parts of air to one of chloroform be admitted during inhalation, but I find this not necessary. I have put under the influence of chloroform some scores of horses and cattle, and have found it quite safe to exclude the atmosphere as far as I possibly could, and cause them to inhale nearly pure chloroform vapour."

It is to be supposed that Mr. Roberts has been invariably successful, for he does not mention any fatal case.

Since Mr. Roberts' paper was published, other gentlemen may have attempted his method; if any of them are present, their opinion would be very welcome. I should particularly like to know if any untoward occurrences have taken place. Does the animal ever injure itself or the assistants? Does it break away from them, and, if so, what occurs? Supposing it becomes necessary to add more chloroform, is there any difficulty in doing so, owing to the struggles of the horse? Is Mr. Roberts' method practicable in confined spaces—in a London yard, for instance?

The experience I have gained in employing what may be called the old method leads me to make the following suggestions:—

I think the best time to administer chloroform is about 10 a.m., the patient having received half a feed of corn at 7 a.m. and no hay. Before the animal leaves the stable, it is advisable to examine the heart, lungs, and pulse. Medical chloroformists do not appear to attach so much importance to symptoms of cardiac weakness as formerly, for there are many cases recorded where persons with feeble hearts have safely undergone operations under chloroform. Perhaps there is more danger attendant upon a diseased state of the lungs. However that may be, it is advisable to auscultate, so that extra care may be taken in case anything abnormal appears about the chest. The horse is then led out and cast. I would recommend that throughout the entire operation all unnecessary noise, confusion, and talking be avoided. It has been noticed in human surgery that loud talking and noise of any kind prevents the patient going off as quickly as would otherwise be the case. I think I have more than once noticed something similar in horses. It has occurred when I have been about to operate upon a patient which I thought was sufficiently under chloroform for my purpose that, just as I was about to make an incision, a non-commissioned officer would warn the men by saying, in a somewhat impressive voice, "Steady." The men would perhaps tighten the ropes, and perhaps move a little, with the result that the horse would begin to struggle, which it had not done before, and more chloroform would have to be given.

I therefore strongly advise absolute quiet. Having got the horse down I feel for the pulse, while the assistant puts a towel over the horse's face without covering the eye and places on my left hand (supposing the horse is on its off side) a vessel, generally a small mortar, with three ounces of pure chloroform, and a sponge a little larger than my fist. I slip the sponge under the towel and apply it gradually to the lower nostril. My hand is kept on the pulse, and I watch the eye.

If the pulse gets weak, or any other untoward symptom becomes apparent, the sponge is withdrawn somewhat, or if necessary taken away altogether for a short time. When the untoward symptoms have passed off, it may be re-applied.

It very often occurs that three ounces are not sufficient to bring about the desired effect rapidly; it is then necessary to add more. In doing so care should be taken, because, if carelessly done, accidents may occur. When the original amount has evaporated, and the sponge is removed for more, the horse's respirations are liable to become deeper. Now, if a strong dose is suddenly applied while the deep respirations are going on, an over dose may



be inhaled and something untoward may happen. It is, therefore, advisable that after replenishing the sponge, it should be re-applied gradually, and not at once thrust in close proximity to the nostril.

Having once got the animal under chloroform, comparatively little of the drug is required to keep it there.

The operation over, I remove the hobbles, but do not otherwise disturb the horse, which is allowed to come round in its own time. The animal is not allowed to rise as early as it may wish, but a man's foot on its neck is sufficient to keep it under restraint for some time longer. If it rises too soon it is sure to flounder about, and perhaps injure itself by falling again. When I consider the horse may get up with safety, one or two men are stationed on either side to support it, and prevent its reeling about. After standing a short time the horse is led into a box, and if the nature of the operation permits, it is bedded down and left alone. Formerly, I dashed cold water on the horse's head, but have long since ceased to do so, except in special cases, because it seemed to upset the patient, and made it attempt to rise before it was fit.

I am strongly of opinion that the chloroformist should have nothing to do with the surgical operation, but should devote his entire attention to the administration of the anesthetic. In everyday practice, however, this would probably be difficult to attain.

The different stages of anesthesia from chloroform have been tabulated as follows:—

- 1st. Stage of giddiness.
- 2nd. Incipient anesthesia.
- 3rd. Sensory paralysis.
- 4th. Total paralysis.

I think the above holds good in the case of horses.

The first effect upon them seems to be fright or curiosity. Sometimes the horse will at once struggle violently and fight against it; at others it will inhale deeply, as if it rather liked the smell but could not quite make out what it was. The next stage is one of excitement; the pulse becomes frequent, the breathing increases, the eyes begin to roll, and, as a rule, agreeable thoughts begin to pass through the patient's brain. They often neigh—go through the process of mastication.

Stallions often show erotic phenomena, but I have not observed them in mares. They probably, however, occur, for in woman they are not at all rare, and have led to considerable unpleasantness—in fact, more than one operator has been nearly ruined in that way.

In the next stage the excitement increases, the eye still continues to roll, the breathing becomes regular and slower, the pulse full, regular, and slower than at first, but faster than normal.

In the last stage the other symptoms are about the same, but the eye ceases to roll, and the pupil dilates, and the eye is senseless to the touch. While in this stage any operation can be performed without causing movement. Towards the end of the last stage but one, operations will not cause pain, but slight movements may occur from reflex action.

Chloroformists ascribe death from chloroform to different causes.

Thus Dr. Turnbull reports that death usually occurs from asphyxia, owing to closure of the glottis, or to paralysis of the laryngeal muscles; or it may be induced by cardiac syncope, or absorption into the blood or nerve tissue, producing entire alteration of the nervous tissues.

Schiff.—“Chloroform can paralyse the heart and blood-vessels at once, without previously paralysing the respiration.”

Benjamin Richardson states from experiments on rabbits:—

"The cause of the fatality from chloroform does not occur, as was first supposed, from any particular mode of administering the narcotic.

"That chloroform will kill, in some instances, when the subject killed by it exhibits, previous to administration, no trace of disease or other sign by which the danger of death can be foretold.

"That the condition of the air at the time of administration materially influences the action of the narcotic vapour; that the administration is much less dangerous when the air is free from watery vapour, and the temperature is above 60°, but below 70° F.

"That there are four distinct modes of death.

"That so long as chloroform continues to be used there will always be a certain distinct mortality arising from it, and that no human skill in applying it can divest it of its dangers."

Dr. Sansom states: "Death in the human subject may occur—

"(1) By spasm of the heart. In this case the heart is found after death contracted like a solid ball. This form of death is rare. I believe it to be an aggravation of that influence upon the sympathetic nerves which in the exhibition of narcotics causes contraction of the arteries and capillaries.

"(2) By paralysis of the heart—paralysis of the sympathetic nerves. In such instances in animals, we have found a sudden dilatation of the walls of the arteries and capillaries. This is the usual form of death from chloroform in man, and it is this form which is aggravated by so-called idiosyncrasy.

"(3) By palsy of respiration—by suffocation. Such has been observed in instances of congestion of the lungs.

"(4) By coma—by the profound action of chloroform. This is the only case in which death may be said to be purely and simply by chloroform."

Owing to the entire dearth in our literature of records of death from chloroform, I have had to have recourse to medical statistics.

I am not in a position to state whether this dearth is due to the rarity of the use of chloroform in our profession, to the extraordinary success which accompanies its administration, keeping the death-rate at zero, or to the dislike we have to record our disagreeable experiences for the benefit of our brethren.

You have heard just now that most authors find no difficulty to lay down causes of death in the abstract, but when statistics are referred to, it is noticed that there *is* a difficulty in finding out the exact cause in single cases. I will not trouble you with a number of statistics, but will merely point out that in 210 cases recorded by Turnbull, fifteen are ascribed to collapse, six to disease, two to asphyxia, four to shock, but of the remaining 183 cases no cause for death is given beyond, of course, the record that they died under chloroform. Lyman gives 393 fatal cases, which I have not had time to tabulate; but there is almost always a want of definite cause for death. In my own practice I have had one fatal case—a horse with a tumour. The horse was to have been cast, but was sent to me instead for operation on the kill or cure principle. The animal died just as I began the operation. *Post-mortem* showed that the lungs were very slightly congested; scarcely at all. The blood was tarry, and had a peculiar odour; the organs were healthy. I naturally *thought* a great deal over this case, and have arrived at the conclusion that the patient died of paralysis of the heart.

A paper on chloroform would be wanting in completeness if a few remarks were not added as to the best antidotes to be employed in case of accidents with the drug.

I propose, therefore, to make a few suggestions, but my ideas must be taken for what they are worth, because I have not had an opportunity of putting them into practice.

They are offered more with a view to raise a discussion, and draw forth the opinions and practical observations of others.



It is of the greatest importance that the operator should always bear in mind that accidents will happen in using chloroform, and that before giving it he should make up his mind what to do in case anything should go wrong. It is advisable that he should have by him the antidotes and means which he considers best, for when death does appear upon the scene it takes hold of the patient so quickly that there is no time to run to get remedies.

If the surgeon has got the remedies at hand, he will be cooler and more confident when the crisis occurs.

Fatal cases are caused by stoppage of the respiration or of the circulation, but generally of both simultaneously. The remedies which are most likely to re-establish these functions are, artificial respiration by intermittent pressure on the thorax, vigorous hand-rubbing of the body, particularly of the extremities, tracheotomy in cases of spasm of the glottis. Cold water dashed on the head and in the rectum will often produce a gasp, which may be followed by gradual re-establishment of the respiration.

As regards antidotes, the following have been used successfully in the human subject.

Nitrate of amyl, which in horses I would suggest might be applied in a twenty to sixty minim dose, in the form of a spray or on a piece of rag to the nostrils.

Hypodermic injections of atropine have been successful in mankind, when all else has failed. Perhaps in horses 1 to 1½ grains might be useful.

Aromatic spirits of ammonia has also met with success.

In the case of smaller animals, such as a dog, I would suggest that it be held up by the hind legs, and the tongue drawn well forward.

I have ceased using chloroform alone in my operations, and administer morphia before casting. I tried this in consequence of seeing some observations in Professor Williams' paper to the National Veterinary Association.

The combination has acted most satisfactorily. The quantity I use varies from eight to ten grains in solution, injected subcutaneously. I inject it about fifteen to twenty minutes before casting the horse.

The advantages are that the horse is quieter to cast, does not struggle so much when down, does not struggle so much while the chloroform is being administered, and does not require so much chloroform. I have not found that the patient is more difficult to revive after the operation.

I have now brought my paper to a conclusion, gentlemen, and in thanking you for the patient attention with which you have listened to it, I venture to express a hope that the discussion which will now follow, will make good some of its many imperfections.

The discussion of the subject was then commenced.

*(To be continued.)*

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## ARMY VETERINARY ASSOCIATION.

*(Continued from p. 129.)*

In the organisation of methods of segregation for various diseases, in directing with success the execution of practical sanitation in and about these sanatoria of encampments, in maintaining them intact and in perfect working order; in arranging for feeding and treating, and the ultimate disposal of the cured, the incurable, and the dead, under the complicated conditions that existed along the lines on the peace side of the frontier during the last war, you will see a task that was never completed, never a success, and a task that never will be until veterinary sanitary science is better recognised in India, and until more inspecting and executive veterinary surgeons are placed in action, with ample and qualified and reliable subordinates, and with legal

authority to destroy cattle. So far, however, as India, in the direction of Afghanistan, is concerned, we must credit the railway extension as a vast and satisfactory sanitary influence against the spread of disease along hundreds of miles of road, and over many square miles of country bounding it; at the same time, railways in their own way, unless carefully disinfected, contribute their share to the spread of disease.

Those who remember what it was to work those lines, encampments, posts, villages, and base hospitals, will, at any rate, recognise how much animal life, labour, and money will have been saved by extending the railroad.

Presuming the veterinary surgeon, with a regiment four or five hundred miles from the frontier terminus of the railway on which his charge is shortly to travel, has gone carefully through his horses; rejected as useless for active service the young and untrained, the known weak ones, and with some exceptions, those over thirteen years of age; that he has minimized—consistent with efficiency—all veterinary and farriery arrangements; induced his commanding officer to leave behind every grass cutter's pony, he (the veterinary surgeon) will find ample and useful occupation on the railway platform during the process of entraining, tendering advice, and taking steps calculated to save his charge many injuries, and himself much subsequent trouble. Guided by a former experience, or perhaps by tradition, he will advise against the use of the ordinary service nose bag for feeding from, whilst the train is in motion and when horses are under new and exciting conditions; for the practice is dangerous, and has been known to cause one per cent. of choking, and one-fourth per cent. of deaths. His supervision will be useful, especially during the first and earlier stoppages, and until the horses have quieted down to their unusual experiences.

Mention need hardly be made of the numerous practical suggestions the thoughtful and conservative veterinary officer may make at these times, and also during detraining, to maintain the efficiency of his charge. The first and earlier marches after leaving the trains, before his men and horses are settled to their work, will afford him opportunity for the continuous exercise of his experience, ingenuity, and resource—that is to say, on the lines of preventing casualties from carelessly put on kits and badly fitting gear.

In fact, on the line of march, the veterinary surgeon must act the part of a detective, and insist on having rectified at once that which, if neglected, may require months to cure. As a matter of course he will have some concern in selection of camp sites, and all other matters having a hygienic bearing upon his charge. If the railway terminus be on the border of the country to be invaded, the opportunity will now arise for the selection of regimental from amongst the general transport here accumulated. Former experience with this class should stand us in good need, for time is pressing, every body for himself, and on the alert to secure the best animals. The veterinary surgeon must here be smart, not only to select, but to reject, even so late, those animals which are likely to knock up within the first week.

His charge will now be increased by five or six hundred ponies, mules, camels, and bullocks, and it will be his special mission to keep the lot in working and marching order—a very large order indeed, it is true, and only to be successfully accomplished by incessant personal inspection and direction, trusting no one who is not proven.

A thousand casualties not amounting to injury may be nipped in the bud by a steady uninterrupted attention to minor matters, the veterinary surgeon thuswise minimising his own duties and sick list, and maximising the effectiveness of his charge, and considerably contributing to keep it in the front rank for real work.

The change of bearing that pack saddles and other gear assumes under pressure of loads, and when animals lose fat or condition, must ever be



provided against, and for this reason the saddler should accompany the veterinary surgeon on all important inspections, and write down his suggestions.

Grooming is especially necessary to the weight carrying surfaces of draught and pack animals, for it is a means of ensuring the daily removal of saddles and gear, as well as the accumulations of dirt, dried perspiration, and matted hair, which together soon act as foreign agents, and hide the abrasions and wounds it is so desirable to notice and attend to early.

Camel-drivers are prone to leave the saddles on their camels for days, a fruitful source of injury and malsanitation; if not groomed, the camel's hair should be frayed out by rubbing with a blunt stick, to get out dirt and perspiration.

With camels, as with the rest of transport, the personal working veterinary surgeon will be the most important factor in maintaining them in working order. It will often be found most desirable, nay, compulsory, to keep them at work, though they may have wounds and bruises about weight carrying surfaces; but here his practical ingenuity will suggest the necessary adaptations and alterations of gear and also the means—medical, surgical, and otherwise—that shall keep them at work, with the least possible suffering.

A very short negligence of manual examination will soon disclose to the veterinary surgeon the evils likely to arise.

As I dare say you are aware, it is customary in Northern India for cavalry and artillery to employ ponies—in the proportion of one to two horses—to carry in the grass cut by its owner. For European cavalry and artillery the system, even in India, might, with advantage, be abandoned. It is a charge of which the Government takes no cognisance, but it requires more supervision from the veterinary officer to keep it in working order, and free from injuries and diseases, by reason of their wanderings, work, and bad management, than his own legitimate charge.

On active service in Afghanistan, the system was a decided failure. In an enemy's country like that, the grass-cutters' ponies were of little use—indeed, actually became a burden to their owners and the service, until they died of starvation and cold. It was impossible for the owners to feed and clothe them, and they could not always be taken out to pick up the living they had no other means of getting. Moreover, in this campaign, it was much easier to feed men than animals, and for this reason it would have been better to employ one grass-cutter per horse, than one grass-cutter with a pony per two horses.

Should these animals be taken, the veterinary surgeon will accept the position and make the best of it for his own sake, and for that of his regimental charge, if not for its own; will frequently and carefully inspect them, their lines and surroundings, their feeding and general management, and be especially suspicious of their introducing parasitic mange. Native cavalry are believed to employ them with more success, but they are part and parcel of the trooper's property, and supposed to be the only transport of two mounted men on service. Though a personal interest should in this case place the system in the best possible position, it never has the care and development that it requires to make it perfect.

You will excuse my enlarging on this topic, but a long experience makes the complaint justifiable. When the sixth Dragoon Guards took over the horses of the eleventh Hussars in 1878, some of which were then isolated under suspicion of Glanders-Farcy, 185 cases of Mange in the grass-cutters' ponies of that regiment had also to be taken over and treated. Some were so emaciated that they could not stand, and others utterly destitute of hair, whilst some had to be destroyed. Half the grass-cutters' ponies with the Carabineers in Afghanistan died from starvation and cold.

In camp, etc., whether temporary or permanent, the veterinary surgeon is a man of action and importance; his knowledge of hygiene, veterinary and otherwise, and of the necessity of thorough camp sanitation, affords him incessant opportunity to apply himself practically and successfully for the benefit of man and beast. Many matters which will not strike the new sanitary officer will force themselves on the notice of the veterinary hygienist, for correction.

Hired transport is always a source of trouble, because of the difficulty of controlling it for treatment and supervision; moreover, the authorities are very slow to sanction the destruction of animals whose owners have subsequently to be compensated. Slaughter cattle—alive and dead—come under the veterinary surgeon's observation, as well as the milch cattle that always follow armies into Afghanistan. The owners of these cattle have a cruel practice of forcing a stick covered with rag into the os uteri of the cow, to increase, by its irritation, the milk supply; and they also inject salt and water into the vagina for the same reason. These atrocities, which are punishable offences under the civil law in India, are punishable by martial law on service, but it is only the veterinary surgeon who will be likely to bring this to notice.

A filthy custom too prevails, of feeding the milch cattle on the fresh droppings of horses, and, unless prohibited, through the report of the veterinary surgeon, the herd will be seen every morning on the manure heaps, feeding upon equine excrement.

The practical veterinary surgeon works out every resource the invaded country affords in the way of foods for the healthy and sick, utilises the water-mills for food preparation, and turns all local appliances and medicines to his own purposes and to the benefit of his charge.

Though the clothing of horses and other animals in all countries is a question of transport, it is also a question of necessity, and a particularly pressing one in Afghanistan. With the advent of November, or earlier, its value is soon forced upon those who desire the conservation of animal life. Without clothing, no class of trooper or transport will long survive the effects of cold, and though the animals that carry the clothing from place to place may be the very means, whatever precautions be taken, of introducing and transmitting Mange, yet clothing must be worn; and if Mange is introduced it must be got rid of; and it is possible to treat, and work, and cure the affected. Indeed it has to be done; but, of course it is essential to work the diseased by themselves, and to observe careful segregation elsewhere. Here, however, the veterinary surgeon has to be constantly on the alert, and to attack not only the first symptoms, but even to treat in anticipation, under some circumstances.

This opens up the question of the disinfection of clothing, which is so difficult to carry out on service, without destroying it; but I think the usual medical applications with which the blankets and brushes become saturated may have the desired effect.

I once constructed an enormous oven to disinfect mangey blankets with hot air; in it 150 were suspended, and all were so thoroughly disinfected, that not an acarus or ovum remained alive; and nothing of the blankets, save cinders and smell, was left on record in the morning!

Cineration, though the best method of disposing of carcasses, cannot always be carried out where animals die by hundreds; wood and refuse are not always to be got at to meet the demands of such vast cremation as Afghanistan afforded; it was carried out so far as was possible, and the pile was constantly burning and constantly growing, from which the stench was often unbearable: that which could not be burnt had to be buried or dragged further away, to be got rid of by some other process.

In ordinary cremation the use of large dried cakes made up of bullocks'



dung and litter is strongly recommended. This class of fuel cannot be excelled, but as it is collected and used by natives for cooking purposes, it is not always available; horse manure and litter also make a good cake fuel, and may be employed for cremation, and every hospital attendant under me had to make six enormous cakes out of this material daily, and to attend to them till sun-dried and fit to store for the purpose of burning Anthrax cases in India before wood was sanctioned.

The main differences between war in Afghanistan and that in any other quarter of the globe, in so far as the veterinary service is concerned, consist in this, that there is little or no dealing with the sea-board or countries beyond it, and that we expect, therefore, nothing to be introduced by ships and their animal cargoes. We have certainly nothing to do with the sea-board in the way of a direct animal supply for field service, excepting that a few ponies may be sent up from Bombay *viâ* Kurachi and the Indus. There is, of course, the regular horse supply from Australia and Arabia to Calcutta, Madras, and Bombay, draughted to the remount depots, or to the depots of corps away on service, as in peace time for training, and afterwards as required, sent forward. All the other animal supply is derived from India—a country well calculated to provide it—so that there is therefore no remount depots anywhere falling foul and getting mixed up with base or other hospitals, and if an accident of this kind were likely to occur, it would not be for a moment tolerated.

But base hospitals, upon enormous scales, and hospitals at selected advance posts on smaller scales, will, as in the past, be necessary, and ought under the departmental system to be better organised and worked than formerly, when regimental veterinary surgeons naturally objected to be withdrawn from their charges to do duty with transport animals and native cavalry horses.

Besides base hospitals at Peshawur, Kohat, and Quetta, the first post in the direction of the Khyber Field force at Jumrood, the entrance into the Pass, had its veterinary officer to inspect all animals passing into India or Afghanistan, a duty involving untold labour, but productive of much benefit to the forces on each side of the frontier line. This action, no doubt, prevented disease being broadcast in both countries.

Well, gentlemen, it now becomes a question whether my paper admits of any discussion, considering that it purports to be a *resumé* of what has occurred; but as it is a mere relation of what will soon occur again, I shall be glad to hear any remarks, and to elucidate any obscure point.

Veterinary Surgeon 1st Class F. DUCK drew attention to a common disease affecting camels—hydatid cysts in the lungs and liver—and thought that endeavours should be made to find out how the camels contracted the parasite, so as to stamp out a very common and fatal disease.

Veterinary Surgeon 1st Class R. POYSER considered the tapeworm of dogs and pigs to blame, and thought the destruction of these animals in infected districts would be the most practical method of dealing with the subject.

Inspecting Veterinary Surgeon W. B. WALTERS was of opinion that veterinary officers should be the purchasers of animals, and that all Army veterinary surgeons should take their turn at this work. Of course some have a special aptitude for this duty, whilst others do not care about it, and would, therefore, not be selected. It rests with the commanding officer how much the veterinary surgeon has to do with the purchasing. Some commanding officers inform them that they have only to look to soundness, etc. Inspecting Veterinary Surgeon Walters thinks that the veterinary surgeon's duties should be defined, and the subject should be brought to the notice of the authorities. Many useless animals are purchased during active service, and many are bought by a Committee with no veterinary surgeon. Many camels

were purchased during the Egyptian campaign without due regard to use; they died in scores, and great numbers suffered from catarrhal affection. Indian officers of Camel Corps rendered great service in the treatment of camels, and carried out instructions given by the veterinary surgeon. Camels which were groomed did not suffer from disease so much as those which were not. As to the disposal of dead animals, he thinks cremation the best.

Veterinary Surgeon F. RAYMOND said that one of the most important duties of the army veterinary surgeon is to give an opinion in the purchase of animals, and thinks it does not require any special knowledge to select army horses. There is an impression that army horses are *special* animals, but this is a great mistake.

Veterinary Surgeon 1st Class THOMSON thinks, with Veterinary Surgeon Raymond, that the public really do believe the army horse is a special animal; it is, of course, an error. As to the care of transport animals, he said, numbers of applications were made by infantry officers for employment in the transport department during the Afghan war; these were accepted, many of them knowing nothing whatever about animals. Camels were kept standing with loads on their backs, through the ignorance of the officers in charge, and this was one of the causes of many injuries and deaths.

In a general discussion on the purchase of animals, Inspecting Veterinary Surgeon WALTERS said he would like to see the duties of veterinary surgeons laid down in regard to the purchase of animals. At present no authority is given to the veterinary surgeon; his position should be clearly defined. It would be to the benefit of the service if the veterinary surgeon was the principal in the purchase of animals.

Veterinary Surgeon 1st Class F. SMITH thought that every veterinary surgeon on joining the Army should be sent to do duty with each mounted branch, to enable him to form an opinion as to their requirements; such information would ultimately be useful to him if employed purchasing.

Veterinary Surgeon 1st Class THOMSON moved a vote of thanks to Veterinary Surgeon 1st Class Poyser for his valuable paper, which was carried with applause.

The meetings of the Association have been held once a week during the Session, when the following papers were read:—

V.S. 1st Cl. G. A. Oliver on the "Veterinary Service with the South Afghanistan Field Force." V.S. Rutherford on "Anthrax in South Africa." V.S. 1st Cl. H. Thomson on the "First Egyptian Campaign with the 19th Hussars." V.S. Morgan on "Cold Shoeing of Army Horses." V.S. 1st Cl. Duck on the "Supply of Army Horses." V.S. 1st Cl. Longhurst on the "Transport of Army Horses by Sea." V.S. K. Lees on "Soundness in Horses."

The meetings were well attended, and the above most interesting subjects thoroughly discussed.

#### MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE sixtieth meeting of the above association was held on Tuesday, June 17th, at the Grand Hotel, Birmingham. Mr. J. M. Parker, President, occupied the chair, and there were present: Mr. A. Over and Mr. J. Malcolm, vice-presidents; Professor Walley, Edinburgh; F. Blakeway, Treasurer; T. Chambers, Hon. Sec.; Messrs. C. T. Barnes, J. L. Barling, E. Beddard, J. Blakeway, James Blakeway, W. Carless, F. W. Barling, H. Collett, H. J. Daves, F. C. Golden, E. Hodgkins, T. J. Merrick, H. Olver, H. D. Pritchard, H. R. Perrins, E. Price, A. B. Proctor, G. Russell, A. C. Robertson, G. Smith, M. Tailby, R. C. Trigger, J. Wiggins. There were also present as visitors: Mr.



## *Midland Counties Veterinary Medical Association. 189*

Pickworth, Tamworth ; Mr. F. Taylor, Stourbridge ; Mr. Irving, Birmingham ; and Mr. E. Lawrence, Wolverhampton.

Previous to the commencement of the business the members were entertained at luncheon by the President.

The Hon. Sec. read letters of apology from Professor Pritchard, London ; Professor McCall, Glasgow ; Mr. F. W. Wragge, London ; Mr. T. Greaves, Manchester ; Mr. Barling, Hereford ; Mr. J. L. Cross, Shrewsbury ; Mr. W. C. Barling, Newham-on-Severn ; Mr. Horton, Warwick ; Mr. Burchnall, Stanford ; Mr. Verney, Stratford-on-Avon ; Mr. Cartwright, Wolverhampton ; Mr. Freer, Uppingham.

The Hon. Sec. read the minutes of the last meeting, which were confirmed. He also stated that he had received replies to the letters of condolence directed to the families of the late Mr. Cartwright and Mrs. Meek.

### *New Members.*

The PRESIDENT proposed Mr. Frank Taylor, of Stourbridge.

The HON. SEC. seconded the nomination.

Mr. J. WIGGINS proposed Mr. James Bayes and Mr. Arthur Marriott, both of Kettering. Mr. A. OVER seconded the nominations.

They were elected unanimously.

### *Birmingham as a place of Meeting.*

Mr. J. MALCOLM said it was desirable that more meetings should be held in Birmingham. It was the capital of the Midlands, and yet it had been three years since a meeting was held in the town. Birmingham was a most suitable place, and if more meetings were held in it there might be larger attendances and subscriptions could be collected more readily. He moved that the first meeting of the Association be held in each year in Birmingham.

Mr. G. SMITH seconded the resolution.

Mr. H. OLVER supported the proposition, and suggested that the Association should have four meetings in the year instead of three.

Mr. MALCOLM had no objection to adding that to his resolution.

The President and several members expressed themselves in favour of the resolution, and an alteration in the number of meetings. They were also of opinion that the first meeting after the election of President should be in the district where he resided or practised.

Mr. MALCOLM said he understood that the Association was to have as many meetings as before, and an extra one in between.

The PRESIDENT suggested that to clear up the matter two resolutions should be passed.

Mr. Malcolm's resolution was then carried.

Mr. H. OLVER moved that four meetings be held, and Mr. H. R. PERRINS seconded the resolution.

Carried unanimously.

### *The Question of Arrears.*

Mr. R. C. TRIGGER said he remarked at the last meeting at Stoke that there were a number of members in arrears. Such a state of things could go on no longer, and he thought a remedy might be found in making a rule: "That the subscription should be paid by the member when elected, or by his mover and seconder, and if such subscription was not paid in three months the election to be null and void."

He also had another resolution, and it was :

"When a member is three years in arrear he shall be struck off the roll of membership."

Mr. OLVER could not support the first resolution, for they frequently

seconded nominations of gentlemen of whom they knew comparatively little or nothing.

Mr. PRITCHARD believed proposers and seconders should be to a certain extent responsible, and he seconded the resolution.

Mr. BARNES thought three months too short a time.

Mr. SMITH felt inclined to support the resolution.

Mr. BEDDARD suggested six months.

Mr. TRIGGER would leave the length of time with the committee.

It was then agreed that "six months" should be substituted, and both resolutions were carried.

Mr. BLAKEWAY (Treasurer) asked if the three years' plan would refer to gentlemen already in the association or from that day hereafter.

Mr. PRITCHARD: From to-day.

Mr. BLAKEWAY complained that he had great trouble with one member who persistently neglected to pay or answer his applications.

Mr. PERRINS moved, and Mr. PRITCHARD seconded, that his name be struck off the list.

Carried unanimously.

### *The Royal College of Veterinary Surgeons.*

Mr. PERRINS proposed that £50 be given to the Building Fund of the College.

Mr. WIGGINS seconded.

Mr. MALCOLM thought the time inopportune. They were only represented on the Council by Mr. Perrins, and they did not often see his name in connection with the representation. He moved as an amendment: "That we defer this matter to a more opportune time." He doubted whether the Council was as economical as they might be.

Mr. BARLING seconded the amendment.

Mr. PRITCHARD supported the resolution, and thought the association should not take a petulant view of the matter. The association had given £50 before and could well afford to do so at that moment.

The HON. SEC. supported the original resolution. The gift of the £50 had nothing to do with the examiners or our representatives on the Council; it was to help to build a college for the profession.

Three voted for the amendment, nineteen for the resolution.

### *The President's Inaugural Address.*

GENTLEMEN,—In assuming the post of President of our association to which you have been kind enough to elect me, I feel that I am incapable of giving you such an address as I could wish, and those among you who know me most intimately are well aware that speaking is not my forte, neither is composition, and when I read the eloquent and exhaustive addresses which have been delivered at some association meetings, I feel in a greater degree still my unfitness for the task. However, no Englishman is supposed to shirk his duty, and I ask for your forbearance if you should be disappointed, and hope that my shortcomings may be leniently treated. While on this subject I cannot but feel that much good *must* arise from our meetings—I mean the meetings of our associations generally—if they draw out some latent talent in the way of eloquence as well as research, and I look forward to the time when members will eagerly get on their legs and debate with enthusiasm, as was the case many years ago at the meetings of the Veterinary Medical Association at the Royal College, Camden Town. The transactions of that association were then published in a separate form, and at one time contained coloured plates. I will take the year 1837 to point out what I have referred to. The session 1836-7 was, singularly enough, the first of the Veteri-



nary Medical Association, so that practically this is jubilee year for associations in our profession. There were weekly meetings at the College, Camden Town, during the winter, and these were constantly attended by the leading men connected with the College and the most eminent practitioners in the kingdom. When I mention the names of Sewell, Simonds, C. Spooner, the Turners, Youatt, Mayer, and others, you will understand that no element was wanting to make our parent association a success. The students were permitted to be present, and I feel sure that to listen to the discussions then held must have taught them quite as much as lectures. To read the reports—for instance, one on a paper introduced by Mr. F. W. Mayer, on the cautery and setons—is to live with the speakers who debated with an eloquence and vigour that has, I fear, never been equalled since. This discussion lasted for weeks, and is interesting to the last degree. Let these meetings of fifty years ago be imitated by us, and I hope that during my year of office I may see more spirit thrown into our proceedings. In attending to this, I feel I have been as great a sinner in omission as any other member, but I promise to do better in future. Just for a few minutes I will refer to the *Veterinarian* for the same year, 1837, and a glance will show there is nothing “new under the sun,” so far as many of our so-called novelties in diseases and operations are concerned. In that year there was evidently an extensive and alarming outbreak of Influenza, sufficiently so as to be most exhaustively treated by such men as W. Percivall, Professor Stewart, of the Andersonian University, Glasgow, Mr. Youatt, and Mr. Karkeek, of Truro—one of the best writers in veterinary subjects; and these observers said it was not a new disease, but was only more common than usual. The symptoms given agree entirely with the outbreak of Mucous Fever, so absurdly and unscientifically called “Pink-Eye,” which prevailed a few years since. The late Mr. Stanley, of Leamington, said then it was nothing new, but he remembered the Influenza of 1837, which it exactly resembled. Although I cannot recollect that year I know the same affection has cropped up at intervals since the time I was apprenticed in 1847. You no doubt all remember the fuss that was made and the alarm created in 1881, almost the same as Cholera in the human race would have produced; and what was the novelty in the disease? None! There is also a paper on treatment of chronic joint lameness, translated from the Italian of Signor Nanzio, that, to my mind, overshadows Dieckerhoff’s operation for Spavin, which was the chief attraction of Mr. Banham’s paper read at Nottingham two years ago. The point in this operation—Nanzio’s—was to separate the skin by incision and dissection over the affected joint, and then with a budding iron to fire into the tissues beneath, keep the wound open with digestives, etc., as long as possible. Great results were claimed for this, and the theory of it, to my perception, agrees with Dieckerhoff, and his puncture of the bursa over spavin.

I see that in this same year Mr. Robinson, of Tamworth, performed lithotomy on a horse. This case was a difficult one, the stone being a mulberry specimen eight by nine inches, and firmly grasped by the bladder. The forceps being too weak to remove it, Mr. Friend, of Walsall, who assisted, removed it with his hand. This last gentleman was a well-known and eminent veterinary surgeon in his day, and it was thought at that time by many that he would have obtained the chair of Cattle Pathology, which was for so many years subsequently so ably filled by Professor Simonds. I have also come across a paper on hock lameness by Mr. Pritchard, of Wolverhampton, than whom there was no better authority, as his well-known papers on the hock of the horse will prove to any one who has the opportunity of reading them. Mr. Pritchard was for many years an examiner for the diploma, and is one of our most worthy links between 1837 and 1887, as ours is the Midland Veterinary Medical Association. I think we may flatter ourselves

that there was no dearth of good men fifty years ago in the Midlands—men who made their mark, and are remembered now for what they did in old days; not men whose names eventually will simply be found in an old directory, as was prophesied by an eccentric preacher in this town of his congregation. I may also here mention others who are still alive, and whose names appear in the volumes I have mentioned. First and foremost Professor Simonds, who was a constant visitor to the meetings at the College, and was not by any means a silent member, but had always some telling practical remarks to make worthy of the man of whom I take this opportunity to say, that no more zealous, conscientious teacher ever honoured our profession. Our old friend, Mr. Clayworth, of Birmingham, contributes a very good case of fractured upper jaw in a filly, which he treated most successfully. I may be excused for remarking, perhaps, that our profession, considering its members, can boast of some good specimens of longevity, as I find Professor Simonds passed in 1829, Messrs. Clayworth, Pritchard, and Price of this town in 1830; but Mr. Proctor, of Solihull, obtained his diploma in 1826, and some of the quintette practise actively now, which says volumes for their initial powers and pluck. There may be other members of equally long standing, but these veterans I have the pleasure of knowing. The heads of our profession were much exercised in this year, 1837, by the conflicting opinions in a horse cause, but I am afraid we have become hardened, and that novelty in such cases has ceased. In a leading article on the subject by Mr. Youatt, he quotes Dr. Latham, and I think the sentence so trenchant as to be worth repeating here: “The early habit of theorising may so pervert the mind of the student, that whatever may be his wish, *he cannot observe honestly*. He gives an undue weight to the facts which accord with his theories, and no weight at all to those that conflict with them—habit forces him to do so, and he cannot help it.” With this I will quit 1837, to which year perhaps I would not have referred, but everything in 1837 seems to have some relation to Jubilee. And the year of her Majesty’s accession being an important one in many respects, so far as its veterinary literature was concerned, I have perhaps drawn too much from that source. As regards the great benefit of associations, there cannot be, to my mind, the slightest doubt apart from their scientific object. Everybody connected with them gets some advantage. How numerous are the informal consultations which are held amongst their members? I, for my own part, should never hesitate to ask a fellow-practitioner about a knotty point in practice at any time; and, moreover, I am, and always have been, most happy to give advice to any professional friend who thinks me worth consulting. This I always have carried out, but I feel sure that the spread and progress of our and kindred associations have roused the feelings generally throughout the land. Not only do we veterinary surgeons derive good from it, but our patients and clients also, as the greatest confidence which has arisen tempts us to chat over interesting and difficult cases in a friendly manner, to which years ago so many were strangers, with good results to all concerned. I wish sincerely, that the meetings were better attended; surely we ought to make some slight sacrifice three or four times a year, as our business is not worth following. I think that half our members might show up, but unfortunately there are far fewer than half occasionally; simply subscribing 10s. a year is not that which is needed. What is wanted is greater interest, and more life in the proceedings. Again, as latterly we have nominated gentlemen to represent us in the Council of the R.C.V.S.—not always successfully, I am sorry to say—that fact alone should draw us together, and lead us to consider seriously who is the man we should know by supporting. At present we have to rely upon the *Veterinarian* and JOURNAL for our sole knowledge of the Council’s work, and should our selected and elected man be what is popularly



known as a silent member, and there are many such, we have not the slightest idea of his worth, or what he has done.

The reports do not give the names of voters on any question; simply the numbers, and I consider we are fully entitled to know which way our representatives have voted. I don't believe in a "caucus" or in interference of speech, but we are in the dark entirely as to the feelings and opinions of the bulk of the members of Council. No formal report or explanation is vouchsafed to us, and if the Council cannot and will not give the names in any division there may be, I think the only thing to be done is for the member any association nominates to give an account of his stewardship annually to his association—say, the first meeting in the year. Members of Parliament have to address their constituents; why should we not be similarly treated? With the examination disagreeables, which I do not now further refer to, as Mr. Barling will presently read a paper on that subject to you, which I hope will provoke a really animated discussion, and the want of new and earnest blood in the Council, the profession is, to a greater extent than usual, on its trial, and therefore it behoves us to select the very best men to represent us, and our choice can only be made sensibly by knowing exactly how much the present Board has done. I write in no carping spirit, but it stands to common-sense that we ought to know the voices of *every* member of Council, not the small proportion only. Votes are very useful, but we want to know how they are given. If, as I suggest, the names in divisions were published, we should have a check on our friends' actions. As it is, we are entirely ignorant. We should have the affair treated as a matter of business and a formal report, either by means of the serials or from the lips of the Council. What is worth doing at all is worth doing well. All the talk at present seems to arise from very few mouths; some lips never seem to be used in the Council chambers as a help to speech. As I hope to see a great change and improvement in the work done, I feel that I have taken up a great deal of time which would be better devoted to the burning question of the day in our circle—namely, the examinations; but I *must* refer to Dr. Klein's lecture at the Royal Institution on the virus of Scarlet Fever which may result from a disease, and I make no apology for reading portions of the leading article in the *Lancet* of June 1st. Judging from this, there does not seem to be any doubt as to the doctor's conclusions. But if I remember rightly, our friend Mr. Greaves combated similar views on an outbreak of Scarlet Fever in his own neighbourhood. Although there can be no hesitation in believing that micro-organisms exist all around us, how are we outsiders to form a just opinion of the various microbes which, according to bacteriologists, have their special powers to produce disease, when one of our learned professors declares he has found an "organism," and another equally learned teacher says it is only a bit of fat? Is it defective eyesight in one or the other, or is it accounted for by what I stated previously on this paper about theorising—in other words, riding a hobby to death. Seriously, however, in our days much is expected from veterinary surgeons, and it is of paramount importance that we should keep up with the times, and not allow the sister profession to find out most of the good things.

*Apropos* of inoculation, there is one point connected with the Swine Fever on which I should like to have the views briefly of such members present who are constantly seeing cases of that disease. I, after much observation, have come to the conclusion that many outbreaks are caused by country "gutters." They are, as we know, not celebrated for cleanliness, and no doubt are ready to operate on any animal, well or ill. Now I wish to ask if any of you notice this fact, that when pigs have been cut they have the disease in a less acute form than those that have *not* been done. I have seen the sow pigs left uncut die in two days, but I have known the hogs that

were cut live for three weeks or a month. Again, I have seen the whole farrow of pigs cut and be apparently not affected except to a close observer, but the old sow has died quickly from the disease. I very much question if there ever is a complete recovery from the fever, and am sure the only remedy is to stamp it out. But if inoculation can modify it—and by inoculation I mean the rough-and-ready way done by the cutter with his dirty hands and knife, it might be carried further and cultivated *à la Pasteur & Co.*

With this brief reference to a most important branch of science I draw my remarks to a close, with the hope that I have not altogether wasted your time and overtaxed your patience, and that there has been at least some interesting matter placed before you. I thank you heartily for your attendance, and hope that some volunteers will be ready armed with papers for our next meeting. And *à propos* of that, we surely ought to manage one every quarter. We are supposed to have four meetings a year. Let us commemorate the present one by holding that number, and hoping that as many of you will remain to dinner as possible. You can tell your wives and families that being Jubilee year you were tempted. And again thanking you for your presence and support, I now conclude.

#### *The Students' Disturbance at Edinburgh.*

Mr. F. W. BARLING read a paper on the above subject.

Mr. PERRINS said the President of the Council had only one object in view, and that was to do what was right and just towards the members of the profession. The students had adopted a wrong way of redressing any grievance they might have had. They had a far better way open to them than by having a row. He had never heard that the students had been relegated for incompetence.

Mr. BARLING said it had been so stated.

Mr. PERRINS thought it was wrong to say so; but the whole matter had better be left alone to die.

Mr. BARLING said he could not allow——

Mr. WIGGINS rose to a point of order. Mr. Barling had a right to reply at the end.

The PRESIDENT ruled Mr. Barling out of order.

The HON. SECRETARY said he could see nothing to discuss; there was no resolution before the meeting.

The PRESIDENT was willing to hear all they could say about the matter from gentlemen who really knew the facts.

Mr. C. T. BARNES, speaking of Mr. Robinson, said he had a certain sarcastic way with him which the students didn't like; but they should have faith in the Council and the examiners; and it would never do for such disturbances to happen because a few students were relegated.

Mr. WIGGINS thought the Association would not be doing its duty unless it marked, in unmeasured terms, its condemnation of the way in which the students treated the examiners at Edinburgh. The latter had to protect the profession from being filled with people with insufficient knowledge, and if the students were to be the judges the sooner the profession went to the dogs the better. Rather than the students should fix the amount of knowledge necessary it was better they should be relegated *ad infinitum*. There were ways of redressing grievances by an appeal to the law. If a man struck him (Mr. Wiggins) in the eye, was he to take a bludgeon and dash out the man's brains? The miscreant crew, who, with rotten eggs and other missiles, assaulted the examiners, ought, if found, never to be allowed to join the profession. It was an atrocious and an abominable assault by disappointed students. He moved that the sympathies of this meeting be offered to the examiners on the occasion of the assault, and we express our confidence in



the Board of Examiners. He felt a certain passive support had been given to such conduct from another quarter, and he did not believe in the unkind things which had been said of Dr. Fleming, a man who had devoted his life to the interests of the profession, and who had worked his brain in its service. He had written the best work on dissection, and yet they said he was an amateur. He (Mr. Wiggins) could say nothing strong enough for such conduct.

Mr. PROCTOR asked the meeting whether it was proper for them to interfere. The Association had a representative and it should be left in his hands.

Mr. JOHN BLAKEWAY had had experience that the examiners were fair, and should be supported. But he knew one examiner who was not what he should be to the students, nor was his way calculated to raise the standard of the profession. It showed the students felt that the body of examiners were fair when only one of their number was selected for assault.

Mr. BARLING agreed with the last speaker. Mr. Robinson put his questions in such a manner that no one in the room would speak to a stable lad.

Mr. OLVER held that as the matter was still *sub judice*, the Association should not yet discuss the matter so far as to send a resolution. He did not say that they could not discuss the matter in a general way, but it would be well to proceed no further at present, considering that the matter was still being discussed by the proper authorities. It would have been better that many of the letters published in the newspapers had never been written. Further, he regretted that Dr. Fleming had taken part in the discussion. He (Mr. Olver) thought it only fair that the marks of all the men, relegated or not, should be published. That there was a feeling against one examiner no one could deny, and it should be arranged that there should be a theoretical examination and a practical, together with a written examination. The latter would prevent any quibbling as to what had been said and would give a student a chance of quiet reflection, which an oral examination would not. He felt quite sure they would be wrong in discussing the matter that day.

Professor WALLEY said he deprecated the unfortunate occurrence as much as any one, and he defied any one to prove that the teachers in any way whatever supported the pupils in what they did. Statements likely to lead to mistakes had been made, and it was time they were contradicted. For instance, Mr. Perrins had made a remark to the effect that Professor Walley might have prevented it had he been present. But he (Professor Walley) had no more to do with the disturbance than any man in the room, nor was he near the examiners' room at the time. He had been charged that he had not stopped the second night. That he had already explained in the *Veterinarian*. But there were some present who knew that for two or three weeks before an examination, the teachers' work was most exhaustive, and the strain on the mind and body very great indeed. He therefore had to state that when the time of examinations came on he was glad to take a rest. No one regretted the occurrence more than he did, and he had lost more than one night's rest in thinking of the unfortunate business and the injustices connected with it. There was much unpleasantness in having misunderstandings with men with whom one had been friendly and intimate, and it was quite possible to feel that some hard-working men ought to have passed. If it were possible for the teachers and the examiners to change places for a little time, it would be found that the balance would be in favour of the teachers. A remedy had to be sought and for the sake of the profession should be sought. In 1880 or 1882 the question had been brought before the Council for an alteration, but the subject had been spoken in favour on one day and opposed the next. There would have to be practical and theoretical examinations to get good men in the profession. Yet what did the examiners do? They sent a man back because he failed practically, and yet they said,

You can't teach practice in this college. They should let the man pass in the theoretical, and then go to gentlemen, like the members present, to see something of practice. They could easily be taken for a fee and learn what they wanted. On the other hand, if a man failed in the theoretical, let him be put back by all means. As to the question of marks he asked that they should be shown fair and above board. He had them himself, but should keep them yet. He knew, however, that men had been relegated for three months with the same number of marks that other men had to go back for twelve months. One of the accused riotous students was on the Irish Sea at the time of the occurrence, and none of his (Professor Walley's) men were in it. No doubt the examiner might have been too disputatious, but to call him the names which had been used during the troublous times was not honourable. He was no doubt anxious to do his honest best for the profession. The men who took part in the disturbance were men who had been rejected time after time, and who had lost all interest in the business. In conclusion, he felt sure that if the subject was adjourned, the meeting would look at it in a different light that day three months. He thanked the meeting for a patient hearing.

The PRESIDENT said it was the undoubted opinion of the meeting that it was not the time to pass a resolution on the subject at once.

Mr. WIGGINS said he should like to test the feeling of the meeting, and see if it did not fix the injustice on the students and not the examiners. He moved, "That this meeting views with the utmost abomination the action of the students in Edinburgh towards the examiners, and we extend our sympathies to the examiners in the matter." The conduct of the students was a disgrace to the unwashed plebeians of Seven Dials.

Mr. BARNES seconded the resolution.

The HON. SEC. begged to move, as an amendment, that the whole matter be discussed at the next meeting.

Mr. CARLESS seconded the amendment.

Seventeen voted for the amendment and four for the resolution.

Mr. PRITCHARD moved a vote of thanks to the President for his conduct in the chair and his valuable paper.

Mr. PERRINS, seconded. Carried unanimously.

The PRESIDENT returned thanks.

Northampton was selected as the next place of meeting.

The members afterwards dined together at the Grand Hotel.

T. CHAMBERS, *Hon. Sec.*

#### LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the above Association was held at the Albion Hotel, Lincoln, on Thursday, June 9th, 1887. Present: T. Greaves, Esq., President, in the chair; Messrs. B. Freer (Uppingham), Vice-president; R. T. Hardy (Sleaford), Vice-president; C. Hartley (Lincoln), Vice-president; Capt. B. H. Russell, Grantham, Treasurer; Messrs. F. L. Gooch (Stamford), Hon. Secretary; W. H. Brooks (Fulbeck), T. Smith (Market Rasen), F. Spencer (Wragby), G. Osborne (Fulstow, Louth).

The Secretary, Mr. GOOCH, proposed that Mr. John Swan, of Stamford, be elected a member of the Association. This having been seconded by Mr. FREER, and supported by Mr. HARTLEY, was carried unanimously.

Apologies for non-attendance were read from Messrs. J. W. Gresswell (Peterboro'), Wragg, W. A. Field (Grimsby), Goodall (Melton), Mackinder (Peterboro'), F. H. Reeks (Spalding), W. Williams, T. Brodie Gresswell, Prof. Axe, Messrs. H. Santy, A. H. Brooks, Prof. Robertson, Prof. Walley, Messrs. Howse (Lincoln), Banham (Cambridge), and Aitken (Loughboro').



Letters had also been received from Messrs. Cox, of London, and Wragg, thanking the Association for the support given them in the election for members of the Council.

The PRESIDENT: They are good men, and you have done right in supporting them.

The SECRETARY noted that no members were enrolled from Gainsborough and other places, and asked if the members would assist him by giving names of those eligible.

The PRESIDENT then delivered his inaugural address as follows:—

GENTLEMEN,—In the first place it is my duty to acknowledge the honour you have conferred on me by electing me your President, and to thank you for such a mark of respect. In the second place it is my duty to do all I can to benefit this Association, and, if possible, to render its meetings more interesting and useful, creating and diffusing amongst my professional brethren a more cheerful and hopeful spirit, as well as a more ardent desire in the pursuit of laudable veterinary objects. Are we not told in that best of all books to take fast hold of instruction? Let her not go; keep her, for she is thy life. In casting about for interesting matter for this address, I may say I do not find myself in that painful dilemma that some persons have said they have been in—viz., at a loss to find a subject which had not already been thrashed out, for really I find myself almost overwhelmed with deeply interesting matter. If at a loss at all, it is which of the many subjects that present themselves I must select.

There are various scientific subjects full of interest—subjects in which the man of a meditative turn of mind, one given to original research, would simply revel in. For instance, *studying disease*, getting a clearer and better knowledge of what disease is—its origin, the law or nature of its progress. A clearer and better knowledge of the *modus operandi* of *medicinal agents*; getting a true and clearer knowledge of its action in health and in disease; getting a clearer and better knowledge of all other *conditions or circumstances* that have an influence in the creation, fostering, or the subsidence of disease, *irrespective of medicinal agents*. Getting a clearer and better knowledge of *hereditary ailments*, and how to cope with them. Getting a clearer and better knowledge of the *cultivations and microscopic appearances of various organisms*. In these various subjects there is a wide field for study. Again, there is the germ theory; the discoveries of Pasteur, the mysteries of Anthrax, Hydrophobia, zymotic diseases—consider the subtle nature of the process of these diseases—and many other deeply interesting and important subjects, any one of them by itself well worthy the pen of our best men. Remember life is short, and our opportunities of doing good will soon be passed; we cannot be always procrastinating and be always intending to make an effort to benefit our profession. It will not do to be perpetually calculating risks and adjusting nice chances. It did very well before the flood, when a man could consult his friend for one or two hundred years on every matter, and then live to see its success afterwards; now if a man waits to consult his friend, time passes, the opportunity is gone, and there is no more time left him to carry out his purposes.

I might have called your attention to veterinary politics; to the teaching of our students; to the value of practical instruction; to teachers and examiners; to the late disgraceful occurrences in Edinburgh, and the desirability of instituting a thorough investigation of them; to the value or non-value of specialist examiners—men wholly innocent of all veterinary knowledge—and compare them with others who possess a general and intimate knowledge of every phase of veterinary science, and show which of the two is likely to be the best judge of the qualifications of the student in reference to his proficiency in veterinary knowledge; to the value to be set on the names on your

diplomas, their influence in your success in life. The VETERINARY JOURNAL recently said: "The nonsense talked about having the names of distinguished specialists on the diploma is not worth notice, except for the argument employed in support of it, that these specialists pass more students than does a board composed of veterinary surgeons; this is perfectly true, but it is, judging from the experience of many years of specialist examinations, a most powerful reason against having such men as examiners. They do not understand our requirements, and have no interest in our profession. This fact has been made patent to all careful and candid observers." Are they taken as a guarantee that you can restore a sick horse to health, or a lame horse to soundness? Is it not, after all, the actual results of your individual knowledge that you are judged by? I say, if Albert Edward himself signed your diploma, it would avail you nothing if you are deficient in practical knowledge—inaptitude in your application. To the way in which the influence, power, and usefulness of provincial veterinary medical associations can be made available in advancing the best interests of the profession, showing the present apathy in the members, and prescribe the best means to remedy it. There are noble souls in our profession, whose zeal and energy would desire our meetings to be more frequent; but there are others, and I am sorry to say it, whose utter indifference and apathy would seem to say that once in a thousand years should suffice. To explain the objects and aspirations of the National Veterinary Association; to lay before you the object, aspiration, and usefulness of the National Veterinary Benevolent and Defence Society. Each of these subjects individually are worthy of being taken for an inaugural address or an essay, to be read and discussed before any association.

We have at our colleges gentlemen who are eminent, who have distinguished themselves as scientific men—men devoted to their profession, and who are most anxious to make their students clever veterinary surgeons. All this we are proud of; but are we who are general practitioners, who are equally anxious to see our noble profession advance, to stand still with folded arms and leave it all for them to do? I maintain that it is the bounden duty of each man to act well his part. Although I respect and reverence a cultured and scientific man, I must at the same time tell you that others, not so favoured by being possessed of high scientific attainments, can, and, as history proves, have, investigated and grasped difficult problems, thrown light upon obscure subjects, and assisted to clear away mists which have obscured for centuries some great, grand truth. It may be that such a one has been placed in favourable circumstances, had extensive opportunities afforded him, and, possessing an inquiring mind, he has perceived cause and effect in a clearer light than other men have been able to do, and has seized hold of a great truth which all other men have failed to understand. We must recognise the fact that there is a vast difference in different individuals in the intensity of intellectual effort. Some men have a sensitive appreciation, and are impelled by an irresistible longing to seek out a better remedy.

What I am endeavouring to lead your minds to is this—viz., that any one of you, although you may not have any pretensions to high scientific attainments, may happen to be placed in favourable circumstances, and have extensive opportunities to clear up some perplexing and vexed question in reference to the nature and treatment of some particular disease, and, by a proper application of your intelligence, you may render a signal service, not only to our noble profession, but to mankind at large, by recording it. Remember, an avaricious man is like the barren, sandy soil of the desert, which sucks in all rain and dews with greediness, but yields no fruitful herbs or plants for the benefit of others. In considering the origin of disease, the investigations of Pasteur seem to



have proved that we may now with certainty reason in the belief that not only are organised substances really found in great abundance in the atmosphere, but that they are the cause of some hitherto entirely mysterious phenomena, putrefaction included. If we examine previous inquiries into the compounds resulting from the decomposition of organic substances we shall find nothing which is at all calculated to bring out such an intelligible view of the origin of many diseases, and also of some phases of putrefaction. Chemists, when they have examined products of the latter action, have found sulphuretted hydrogen, carburetted hydrogen, hydrogen, carbonic acid, nitrogen, ammonia, acetic acid, lactic acid, butyric acid, and numerous uncertain bodies having no activity, and, to all appearance, utterly incapable of producing those prodigious results that are found when the force begins to work that produces those fatal diseases which decimate our flocks and herds. That organic matter, the *débris* of living bodies, exists in the air can be shown by incontestible proofs. It may be recognised by the sources, and made evident by the scientific processes of the chemist. It has been rendered almost certain by Pasteur that fermentation and putrefaction do not go on without the presence of organisms, and most likely living organisms. By passing air through cotton wool these organisms can be so filtered out that the filtered air finding entrance to a vessel containing flesh does not set it into putrefaction. The solid bodies contained in the air were deposited on the cotton wool through which the air had passed. The organic substances were destroyed by heat, a little above or a little below boiling water, and would not afterwards excite putrefaction or fermentation. The nature individually of these bodies, both as regards quantity, character, and functions, is what now requires investigation. Pasteur first gave the substances duties to perform, giving, in fact, a finish to the inquiry up to this stage, viz., that putrefaction and fermentation are begun only when there are present bodies in the air which are not gases or vaporous, but solids, and have an organic structure and are living; so it will be seen, whenever there is a deficiency in ventilation in a stable, there will be an accumulation of organic particles originating in organic functions, mainly the acts of respiration and perspiration, injurious to health, and ultimately to life, they being direct poison to the animal frame. These statements are not new, but they are sufficiently important and interesting to be worthy of recapitulation. We are evidently opening up rapidly and satisfactorily a new era of sanitary science in respect of a knowledge which is calculated to guard us against the inroads of infectious diseases. The advance is simply marvellous—it has been by leaps and bounds. Every such advance is a clear gain. Many illnesses are regarded as mysterious in their origin simply because of our inability to account for their causes. Last night, before the Lancashire Veterinary Medical Association, Dr. Dreschfeld gave a deeply interesting lecture on micro-organisms. It appears to me that the time is fast approaching when all doubt or uncertainty as to the existence of any particular disease will be cleared up with unerring certainty by demonstrating the existence of the particular or individual micrococci, or bacteria, or bacillus, which the microscope will at once detect in the sputa, or excretions, or in the blood.

If I were to pray for a taste which would stand by me under any variety of circumstances, and be a source of happiness and cheerfulness to me through life, and a shield against its ills, however things might go amiss and the world frown upon me, it would be for a taste for reading the above subjects, studying and meditating upon them as if in a serener clime—

“Where never creeps a cloud, or moves a wind,  
Nor even falls the least white star of snow,  
Nor even lowest roll of thunder moans,  
Nor sound of human sorrow mounts to mar  
The sacred, everlasting calm.”

At the close Capt. RUSSELL proposed a hearty vote of thanks to the President for his inaugural address and his expression of his views on the subject he had undertaken. He had rightly said life was but short and the opportunities were very few, and it certainly behoved them to be prepared and ready to embrace every opportunity that might occur, and learn to master the subjects that were brought before them. Even some of their older members of the profession found they had almost to begin their studies again, and go through what they considered they knew all about and make fresh researches, in consequence of the rapid progress that had been made during the last ten or twelve years. It was a very interesting inaugural paper, and he hoped Mr. Greaves might long enjoy health and strength. He hoped before the next meeting to have had the opportunity of inspecting and admiring the admirable picture of their President which had been presented to the Royal College.

Mr. GOOCH had great pleasure in seconding Capt. Russell's proposition, which was supported by Mr. HARTLEY, who said that he trusted their good wishes for the President's health might be carried out in their entirety.

The resolution was unanimously adopted, and the President suitably returned thanks.

Mr. GOOCH then read his paper as follows:—

#### SOME OF THE HELMINTHS OF OUR DOMESTICATED ANIMALS AND THE DISEASES CAUSED BY THEM.

MR. PRESIDENT AND GENTLEMEN,

From one so young in the profession you must not expect to learn anything new, but from the few notes collected on what I consider some of the principal parasites of our domesticated animals I trust a discussion may arise which will be beneficial to every one present. Although helminthology was considered by most students a very dry and difficult subject, I think, nevertheless, it plays an important part in the after life of the veterinary surgeon, as so many diseases which he is called upon to treat (both external and internal) owe their origin to the presence of some one of these parasites. Helminths may be classed under two heads, viz.: Entozoa, or those living inside, and Ectozoa, or those living outside. I shall first consider the entozoa, commencing with those of the horse, and from the short time allotted for a paper, I shall not think of describing the minute anatomy, etc., of any one particular helminth, but simply give a rough sketch of a few infesting each animal.

The first one that I shall describe, and the commonest of any infesting the horse, in my opinion, is the *Ascaris megalocephala*, or common lumbricoid of the horse, so called because thought to have a large head, but, in reality, it has no head. It resembles the garden lob-worm, and from the so-called head there are three prominent lips; the body is smooth, somewhat pointed at the tail. The males are from six to eight inches long, females seven to seventeen inches long. It is found in almost every part of the intestinal canal, but generally in the small intestines. There are two ways by which the embryo is developed, viz., either by yolk segmentation or direct generation. They are oviparous, and the embryo, "after freeing" itself from the egg, either migrates about water, herbage, etc., are swallowed by the horse, and there become maturely formed, or else pass through some intermediary bearer before becoming sexually matured.

*Symptoms produced in the horse by this worm.*—Colicky pains seen intermittingly, unhealthy condition of the skin, staring coat; and although the animal feeds well, he does not improve in condition, but, to use a common expression, he is very "tucked up," pale condition of the vis. mucous membranes. In some instances you get pouches formed, due to the attenuation of



the coats of the intestines, and in one instance I remember a horse that died from a large number twisting themselves together and completely blocking the alimentary canal.

*Treatment* for lumbricoid.—There are many receipts for the expulsion lumbricoid, but the one I have been very successful with is the following:— $\mathcal{R}$  Antim. Tart. jss.  $\mathfrak{z}$ , Ol. Tereb. js.  $\mathfrak{z}$ , Ol. Lini. 10, followed by an aloetic purge in the morning, the animal to fast. The other remedies are Santonine, Ferri Sulph., Felic. Maris, etc., etc.

*Strongylus armatus*, or palisade worm, at first supposed to consist of two varieties, viz., major and minor, but it has been proved that they are simply different stages of growth of the same parasite. It is a moderate-sized nematoid, having a straight body, with a globular and somewhat flattened head males, 1 in. to  $1\frac{1}{2}$  in. long; female,  $1\frac{1}{2}$  in. to 2 in.; found in the intestines, especially the double colon and cæcum.

*Development*.—Their embryo is developed in the interior of the egg after its expulsion from the host, and being lodged in moist mud, where, according to Cobbold, they change their first skin in about three weeks, after which they pierce the bodies of their intermediate bearers (snails, etc.), from whence they are taken whilst the animal is drinking, or in the fodder, into the alimentary canal of the horse, their ultimate host. From the stomach they bore their way into the blood-vessels, where they again change their skin and give rise to aneurism. After a time they again commence their wanderings, and pass into the large intestines, where they rapidly acquire sexual maturity. It is a dung feeder, but sometimes, during its wanderings, it passes into other tissues of the body (kidney, liver, etc.), and sometimes produces fatal results (example in the VETERINARY JOURNAL for March). The minor stage of this parasite is the one which is most dangerous to its equine host, viz., when it is in the blood-vessels. Its principal seat is at the root of the anterior mesenteric artery, but is also found to give rise to aneurism in the celiac axis, post-mesenteric, splenic, and even the aorta itself. The common lumbricoid, palisade worm, and the four-spined strongyle (*Strongylus tetracanthus*), are the three parasites principally productive of Colic.

*Strongylus tetracanthus* (male and female about the same size, viz.,  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in.), found in the cæcum and colon. It is a true blood-sucker, and is developed very similar to the *Strongylus armatus*, except that, when in the intestines, in the trichonemous stage, they pierce into the inner coats, encapsule themselves, and form little pill-like masses, and then again enter the tissues of the intestines before becoming mature.

*Symptoms produced by the Strongylus armatus*.—Loss of flesh, colicky pains, more or less constant, coat unhealthy, muscles flabby, abdominal distention, diarrhœa, fæces fœtid and watery, mucous membranes pale, great weakness, more or less frequent cough, and sometimes partial or complete paralysis, due to the formation of a clot of blood, causing thrombosis of one of the principal vessels, and thus interfering with the supply of blood to that part supplied by the particular vessel.

*Treatment*.—I have found the same treatment which expels the common lumbricoid will expel these strongyles, but you must be careful in administering the Ol. terebinth, as it will very often irritate the wounds caused by the *Strongylus tetracanthus* piercing the coats. Of course this treatment applies to the mature stage of these worms.

*Oxyuris Curvula*, or pin worm.—It is fusiform in shape, gently curved body smooth; males  $1\frac{1}{2}$  in. to  $1\frac{3}{4}$  in., and females  $3\frac{1}{2}$  in. to  $4\frac{3}{4}$  in. long; found in the cæcum and colon, and, although not found in the rectum, causes great irritation at the anus by the clusters of eggs which form around it in the form of incrustaceous matter.

*Treatment*.—A carthartic, followed by Ferr. Sulph., also carbolic acid in 1

to 40. Cobbold says Santonine is no use in the treatment of this parasite. If the eggs are left in water they burst, and the parasite escapes.

The *Cestoids* of the horse are very insignificant, both as regards their size and the symptoms they create, the two principal being the *Tænia perfoliata* and the *Tænia plicata*. The *perfoliata* is the most common, but is only from 1 in. to 5 in. in length, found in the cæcum and colon, and is distinguished not only by its length, but also by the rounder condition of its head than the *plicata*, which is nearly square-headed, and from 6 in. to 3 ft. in length, seen in the small intestines and stomach. Generally you can tell a horse with tape-worm by finding some of the proglothides in the fæces. The best remedy for *Tænia* is the Ext. Felicis Maris, combined with the Ol. Tereb. and Ol. Lini, to be given three days in succession.

Another species of parasite, but which is not a true helminth, is the *Gastru equi* or common bot, classed with the parasites on account of its larval form living as a parasite. It is the larval state of the bot-fly, which deposits its eggs on the hair of horses, in such a position as to enable the horse when licking itself to take the egg into its mouth, which, from the warmth and moisture of the tongue, combined with the pressure of licking, bursts, and a small worm escapes, which sticks to the tongue, and then passes down into the stomach, and there fixes itself, by a hook on each side of its mouth, to the cuticular lining. It here undergoes no change (except that of growth, being at this time about one inch long) for about nine months, when it detaches itself, passes into the food, and is discharged with the fæces; it then burrows into the earth, and assumes the pupa state, where it remains for about six weeks, and then develops itself into the perfect fly. There are several other kinds of æstri affecting the horse, but time does not permit of a description.

*Ox and Sheep.*—As several parasites infest both of the animals, I shall not take them under different headings, but try and point out the different pathological condition they present in each animal. The first I shall describe is the *Fasciola hepatica*, or common fluke (giving rise to the disease called *Rot*, and more frequently met with in sheep than in cattle), is a large nematode worm, flattened and ovate-lanceolate in shape, the mouth being surrounded with a powerful sucker. It is a hermaphrodite; length,  $\frac{1}{2}$  in. to  $1\frac{3}{4}$  in.; breadth,  $\frac{1}{4}$  in. to  $\frac{3}{4}$  in. It infests the livers of ruminants, horses, rabbits, hares, kangaroos, and, according to Cobbold, it has been found about twenty times in the human subject. It gives rise to *Rot* in nearly all these animals.

*Development*, this parasite passes through eight different stages before becoming the mature fluke. First, the eggs; second, the ciliated *embryo*, which bursts from the eggs in ditches and ponds, etc. In this condition it remains free for a few days, loses all its ciliæ, and becomes the third, or *Planula* stage, or in the form of a creeping larva, which attaches itself to certain mollusks, principally the *Planorbis carnus*, or common water-snail. Fourth and fifth stages are called nurses, which are of two kinds, organised and inorganised; when inorganised, called Sporocysts or germ sacs; when organised they more resemble the mature fluke, and are called Rediæ; after which they pass to the sixth stage, or Cercariæ; tailed, in which state they are taken by the sheep, etc., when drinking, into the stomach, where they soon lose their tails, and pass into the seventh, or *Pupa* stage. They are now rolled upon themselves, pass up the ducts into the liver, where they soon become maturely developed.

*Symptoms* of *Rot* may be divided into three stages, viz., early, advanced, and final.

*Early Stage.*—They walk slow, great thirst, appetite increased, and continue to gain flesh for about six weeks, when the rumination becomes im-



paired; mucous membranes become pallid, and you arrive at the second, or *advanced* stage, in which you get a falling off of the appetite, feebleness, pain on pressure to the loins; skin and mucous membranes very white; conjunctival membranes infiltrated; wool dry, brittle, and easily detached. *Final*.—Pendulous abdomen, swelling at the jaw, razor back, extreme emaciation, staggering gait, diarrhoea, wool falls off.

*Treatment*.—No use; but in the first stage the disease may be checked, so as to enable the animal to be fattened by removing to higher ground; give a saline purgative, and give nourishing food, and let the fodder, etc., be that which was grown on some elevated land, and take care there are no stagnant pools.

2. *Strongylus micrurus*, or small-tailed strongyle, is a moderate-sized nematode with a round head, more or less winged. The reproduction is oviparous. Males,  $1\frac{1}{2}$  in. to  $1\frac{3}{4}$  in.; females,  $2\frac{3}{4}$  in. to 3 in. It is the Husk-producing worm of cattle. The common earthworm is the intermediate bearer.

*Strongylus filaria*, or common lung strongyle of sheep, is distinguished from *S. micrurus* by having no papillæ on its head. Males, 1 in. to 1 ft. 2 in.; and females nearly 3 feet long. The development of this parasite is unknown, but Cobbold thought that its larval form infested snails, etc.

*Symptoms of Husk*.—Dull expression, quickened breathing, foetid breath, foaming at the mouth and nostrils, violent and spasmodic cough, loss of appetite, emaciation.

*Treatment*.—There are various specific remedies for the treatment of Husk, but in my experience I have found the following to be the most successful:—R. Ol. Tereb. ss. ʒ., Ol. Lini. ii. ʒ., Æth. Sulph. min. X. To be given two mornings in succession, then miss one morning, and give a third dose on the fourth morning. This, in my opinion, sets up coughing, and consequent clearing of the tubes of the larvæ and mucus. I think any remedy that would destroy the parasite would also destroy your patient, as I have placed one in sulphuric acid, and he made vermicular movements for several seconds. Other veterinary surgeons have had good results from inhalation of chlorine gas, etc., which acts in the same way as the above. Others have tried the intertracheal injection of Ol. Tereb., etc., but I have not yet heard of any great success attending its use. My cousin tried it in calves, but was not very successful. I should also support the system with as much good nourishing food as possible.

*Strongylus rufescens*, or Gordian Strongyle (so called because Dr. Crisp thought it to be a gordius), is very often associated with *S. filaria*. Males, 5 in. to 6 in.; females, 6 in. to 7 in.

The principal cestoid of ruminants is the *Tænia expansa*, which, when fully mature, is more frequently seen in the sheep than the ox. Its body consists of about 1,000 segments broader than they are long. It is the longest of all tapeworms, being (according to Cobbold) in sheep from 8 feet to 30 feet, and in oxen, from 40 feet to 100 feet. Width at its widest part,  $\frac{3}{4}$  in.; found in the large and small intestines. The late Professor Cobbold thinks its larval form resides in the louse of the ox.

*Symptoms*.—Emaciation, with dysentery, with a falling off of the appetite.

*Treatment*.—Ol. Felic. Maris, given in doses according to the size of the animal, but I think it very rarely happens that veterinary surgeons are called upon for treatment of this parasite.

*Cysticercus bovis*, or beef measles, differs from the pork and mutton measles in its head not being furnished with hooks. It is the larval form of the common tapeworm of the human subject, *Tænia mediocanellata*. The larva, when out of its capsule, is generally  $\frac{1}{4}$  in. to  $\frac{1}{2}$  in. long. The *Cysticercus ovis* is supposed to be the larval form of the *Tænia tenella*.

Another bladder worm, found only in the mesentery of the sheep, is the slender-neck hydatid *Cysticercus tenuicollis*, and is important as being the larval form of the *Tænia marginata* of the dog. Another important hydatid of the ruminants is the one giving rise to *Gid*, and is called the *Cœnurus cerebralis*, generally found in the brain of sheep, cattle, goats, deer, etc., and also in the soft structures of rabbits. It resembles the larval form of *T. Cœnurus* of the dog.

*Symptoms of Gid*.—Rotary motion; do not graze freely; paralysis on the opposite side to the vesicle; head elevated or depressed if situated in the centre, animal easily frightened.

*Treatment*.—Medical treatment no use—advise slaughter.

*Trichocephalus affinis*, or common whip-worm, sometimes gives rise to severe symptoms in ruminants, particularly in sheep. Males and females about 4 inches long.

3. *Pig*.—The helminths of the pig, although not very detrimental to the animal itself, are nevertheless of a vast amount of importance in respect to the entozoa of the human subject, it being the intermediary bearer of some very important human parasites in their non-mature state. I shall, therefore, only describe one parasite affecting the pig, viz., *Trichina spiralis*, or spiral flesh-worm. The development of this parasite takes about three weeks after being taken into the stomach, capsule digested, then pass into the intestines of the pig, principally the duodenum, where it takes two days to become mature; then after about a week the embryos leave the body of the female worm, and immediately commence penetrating the walls of the intestines in order to pass as direct as possible into some voluntary muscle. From the time they commence their wandering to the time they become the mature trichinæ is about fourteen days. Each one is generally enveloped in a capsule, but two, or even four have been found in one capsule. Male 1-16th in., female 1-8th in. long, larvæ 1-27th in. to 1-30th in. They have been known to live in their capsules from eighteen months to two years. This parasite is the larval form of the *Tænia soleum*. Other important parasites of the pig are the *Stephanurus dentatus*, or crown-tailed strongyle, and *Echinorhynchus gigas*. This latter is the only thorn-headed or acanthocephalous worm liable to infest our domesticated animals (Cobbold).

4. *Parasites of the Dog*.—Of all our domesticated animals, I think that the dog is the one which we are more often called upon to treat for parasites, and the first one I shall described is the *Ascaris marginata*. It is the commonest of all parasites infesting the dog, and is a moderate-sized nematode, nearly uniform in size throughout. Males 2 in. to 2½ in., females 3 in. to 6 in. long. It is similar to the *A. Mystæ* of the cat, and the *A. Leptopera* of larger canines, being all separate varieties of the same parasite, and only differing from each other by the wings placed on each side of the head, which are the smallest in the dog and largest in the larger canines.

*Symptoms*.—Wasting, voracity, irregularity of bowels, short cough, irritation at anus; in the cat, more particularly, you get vomits of large quantities of mucus with numerous parasites.

*Treatment*.—Castor oil, with from two to four grains of Santonine, according to the size of the dog.

Another nematode infesting the heart of the dog, and the larvæ of which are found circulating in the blood, giving rise to fits, which often end in death, is the *Filaria immitis*, or cruel thread-worm.

*Tænia serrata* is a moderate-sized cestode, from two to three feet in length, and found in about ten per cent. of all English dogs, but most common in sporting dogs, especially greyhounds and harriers, due to the fact that they eat the intestines of rabbits, etc., in which dwell the larval form of this parasite. This parasite during its *development* undergoes two Biatomes, or life-



cycles, viz. (1) From the egg to the cysticercus; (2) Cysticercus to mature worm. The middle stage is called the Cyst. pisiformis. It takes two months to develop from egg to cysticercus, and one month to mature worm when artificially produced, but much longer naturally produced (Cobbold).

*Tænia cænurus*, or Gid tapeworm, is of great importance, on account of its larval form giving rise to Gid in sheep, as previously stated. It is 18 to 24 in. long and principally seen in the small intestines.

*Tænia marginata* is the largest cestode infesting the dog, and somewhat resembles the pork-tapeworm of the human subject. They vary in length from five to eight feet, and are found in the small intestines of about thirty per cent. of our English dogs; its larval form, Cyst. tenuicollis is found in the mesentery, etc., of sheep. In the treatment of cestodes I find that extract of Male-fern, in from six to twenty drop doses, the most effectual, but have also given Areca nut in  $\frac{3}{4}$ ss. to  $\frac{3}{4}$ i. doses, and a pill consisting of Colocynth three grains, Jalap eight grains, varying according to size, age, and condition of dogs, as I have found very small doses of any vermifuge not only give rise to violent symptoms, but all produce death; too much care cannot be exercised, therefore, in giving any vermifuge to young animals.

#### Ectozoa.

This class of parasite give rise to numerous diseases of the skin in our domesticated animals, and may be classed under two heads, viz., animal parasites or dermatozoa and vegetable parasites or dermatophyta. The animal parasites are (1) those which produce scab, itch, mange, etc., in all animals: and this class may be again divided into three classes, viz., *Sarcoptes*, or those that burrow in the skin; *Dermatodectes*, that only bite the skin, and *Symbiotes*, or simply pierce the epidermis. This is Gerlach's classification. All these parasites live on serosity due to the effusion caused by the irritation which they excite. Either one or more of these varieties affect all our domesticated animals, viz., all three varieties have been found on the horse and sheep; and two in the ox, viz., dermatodectes and symbiotes; and one in each of pig, dog, and cat. The sarcoptic variety of the horse and dog is easily transmitted to man. To distinguish between the different varieties, place a fresh scale in the sun; and if sarcoptes are present, they will soon be found all on the underneath surface, whereas the dermatodectes are on the outer surface. Again, the sarcoptes are isolated, whereas the symbiotes and dermatodectes live in clusters. Thirdly, the symbiotes do not burrow, but merely bite the skin, and principally invade the limbs.

*Treatment.*—In the horse I have found the following receipt very effectual, viz.,  $\mathcal{R}$  Sulphur  $\frac{1}{2}$  lb.,  $\mathcal{R}$  Pul. helebore  $\frac{1}{2}$ ℥, Ol. turps  $\frac{1}{2}$ ℥, Whale oil  $\frac{1}{2}$ ℥, Carbolic acid  $\frac{1}{2}$ ℥; mix and apply three successive days, then wash off and again apply; but in the dog I have tried Prof. Williams' remedy with a fair amount of success, viz.,  $\mathcal{R}$  Creosote,  $\frac{1}{2}$ ℥, Olive oil  $\frac{1}{2}$ ℥, Sol. potassæ  $\frac{1}{2}$ ℥, and Sulphur  $\frac{1}{2}$  lb., also Train oil, Spirits of tar. I have found the first one almost certain cure in cats.

The second class of animal parasites are the *Epizoa*—those which live upon the skin, and are the lice, fleas, ticks, etc. The first is the one the veterinary surgeon is more often called upon to treat, and I have found the Pul. staphisagria very effectual in the following proportion:— $\mathcal{R}$  Pul. Staphis. 1 lb., Sapo mollis 1 lb., Aqua fervens  $\frac{1}{2}$  gall.; let stand all night, then add  $\frac{1}{2}$  gall. more water, 1 lb. more soap, and apply to the skin warm.

The second class of ectozoa, or those produced by vegetable parasites, are of two forms, viz., the *Tænia tonsurans*, or common ringworm, seen in most of our domesticated animals, and (2) the *Favus*, or honeycomb ringworm. The first is the only one I shall describe, as the latter is seldom seen in this country. The *Tænia tonsurans* is due to a cryptogamic parasite, the

*Triophyton*, which is seated in the interior of the roots of the hair, which after a time lose their elasticity and break off, leaving the fungi in the form of a greyish white bran-like incrustation, thus differing from favus, which are yellow, covering the epidermis. It may affect any part of the body, but principally seen on the head, face, neck and hind quarters; very prevalent amongst young cattle. It is very contagious, and may be communicated from one animal to another, and from animals to man. It more often affects badly-fed and cared-for beasts, but it is not confined, as many well-fed beasts, carriage-horses, etc., are liable to become affected.

*Treatment.*—I generally cause the affected parts to be well washed with soft soap and warm water, removing as much as possible of the bran-like scales, and apply the common iodine ointment at once. I have one or two farmers in my district who applied common mustard, as mixed for the table, with a fair amount of success.

Gentlemen, I am very sorry that I could not attempt a more interesting study, but I hope at some future meeting of our society, when I have seen a little more practice, to give you some paper on a more interesting pathological subject, but as I said in the beginning, a discussion may arise which will be beneficial to all present. I must apologise for not treating the ectozoa more fully, but I did not commence that part of my subject till last evening, and therefore must plead want of time.

The PRESIDENT: Mr. Gooch, you have no reason to make any excuse for not having gone fully into the subject. I have been very much pleased with the manner in which you have handled the subject. You have gone fully into it, and that paper must have cost you a great deal of labour, and every one present will agree with me in according you their very best thanks for the labour you have bestowed on the very interesting paper.

The vote of thanks was adopted by acclamation.

#### *Next Meeting.*

On the proposition of Mr. Hartley, seconded by Mr. Gooch, it was resolved that the next meeting should be at Louth, at 12 o'clock (noon), in September.

#### *Mr. Gooch's Paper.*

The President expressed a hope that the meeting would sanction the sending of this paper to the veterinary journals for publication, and the official reporter to the Society (Mr. W. Mason, of Gainsboro') was so instructed. Several interesting pathological specimens were displayed by Mr. Gooch, in illustration of his subject.

Mr. FREER said: He should like to himself thank Mr. Gooch for the very careful way in which he had prepared his paper, and to offer a few remarks thereon. As to the lumbricoid worm, he saw that Mr. Gooch had used santonine. He had not seen much benefit from santonine, but probably one of the finest remedies was sulphate of iron, given in large doses with potassa tartrate of antimony, and in six or seven days brisk doses of aloes. For Bronchitis in calves, caused by *Strongylus micrurus*, he found an intertracheal injection of turpentine useful in checking the disease. It so happened that he had seven or eight young Irish beasts of his own suffering from this complaint, so he picked out the worst and gave it one dram of turpentine with chloroform and glycerine, and it had no effect upon the steer beyond producing a little coughing. Although in seven or eight different cases he had administered strong doses of turpentine, he found that two doses of this medicine administered *intertrachea* absolutely cured them. If taken in time, he believed this was a remedy of great service and value. One particular in the administration was that it was not at all unlikely that instead of the instrument going into the trachea it would only penetrate the



tissues and cause effusion; but if the pipe was pushed well into the trachea there would be little or no effusion to be seen afterwards. He thought that, particularly if taken in time, with other remedies, such as hygiene, it would be found to be of a very serviceable character.

Captain RUSSELL also desired to thank Mr. Gooch for his very interesting paper, which must have given him a great deal of trouble, for which the Association were very much obliged. It was a subject of great interest and importance, for he believed there were more diseases due to the presence of parasites than they were aware of. Referring to inter-tracheal injection, he thought it took up so much time and was such a very great deal of trouble, for they almost required the points of their injection instruments to be made for the job, and then they had to lance the skin, and push the point into the trachea, that it was hardly worth while. His points were not strong enough, and he had to make a little hole to push the instrument into the trachea, and take what care they would, they would still have one or two cases in which it got into the tissues adjoining, and there would be a swelling, but a swelling of no importance. He held that when they had plenty of time and care was used, it was of great importance, but when animals were very bad no great good was done. He used for this disease turpentine, creosote, opium, and chloroform. In a case he had last week, the larynx appeared to be perfectly paralysed, and the structures of the epiglottis and larynx so inflamed, that they were not able to collapse, and every mouthful went down into the animal's lungs, and a great portion of it oozed out of the tracheotomy tube. That animal did not die from inflammation of the lungs, but from the result of the foreign agents, and exhaustion, and in ten days it was dead. When he tried to pass the tube into the œsophagus it passed into the trachea. He could pass his finger over the epiglottis without any obstruction at all. He reminded them that many medical men in Germany treated their patients by tracheal injection, whether human or veterinarian, and suggested a trial of the remedies. As to the *Strongylus tetracanthus*, in opening the body of a horse he found that the cæcum was burst; there were at least a bushel of these parasites in the cæcum, and it looked just like malt coomb; the whole cæcum was full of them. He almost invariably found the *Strongylus armatus* outside the fat of the kidneys, as well as in the inferior mesenteric artery outside the intestines, and in the pelvis. They got Welsh ponies, and when two years old they often died, being infested with this *Strongylus armatus*.

Mr. HARDY asked if any one had ever seen a case of ruptured stomach from bots, and all replied in the negative. Mr. Hardy said he found the animal to which he referred in a dreadful state, and it died, and he made a *post-mortem* examination, and the stomach was full of thousands of bots, which had eaten through the coats of the stomach and ruptured it.

Mr. FREER, in answer to a question, said he procured the instrument he used for inter-tracheal injections from Messrs. Arnold. As to Mange, he had found a free application of mercurial soap useful. He once saw half a pound applied to a cart-horse with no bad effect.

Mr. HARTLEY said as to the inter-tracheal injection, he had seen some cases in which Capt. Russell operated, and he should like to know how they progressed.

Capt. RUSSELL said five cases got better with the creosote, opium, chloroform, and turpentine.

The PRESIDENT asked Mr. Freer if he had seen any bad results from inter-tracheal injections in any instance.

Mr. FREER: No, unless you miss the trachea. It is a good plan to pass in a cannula first. I used it in fifty cases last year.

Capt. RUSSELL said he used it in forty cases with no bad results.

Mr. HARTLEY said he looked upon ether and linseed oil as a very good vermifuge.

Mr. GOOCH thought ether was good for certain sheep worms. He asked how they thought inter-tracheal injection acted—Did it kill the parasite, or only acted by expelling it from the lungs? In one case he found two specimens in the testicle of a horse. As to the ruptured stomach through bots, he thought it was caused through the number present, which would press so close together and thereby cause the rupture.

Capt. RUSSELL held that the medicine acted by suffocating the parasite, and by absorption—probably a little of both.

Mr. FREER thought the medicine stupefied them, and the animal coughed them up, but as long as they were living they maintained themselves in the lining of the bronchial tubes. He thought they were stupefied, so that they could be thrown out.

Capt. RUSSELL stated that the other day he was operating on a rig horse with his testicle inside his body, and found he had a substance to deal with of a considerable size. He made a long incision right above the internal ring, about six inches long, and found a substance about as big as a child's head, a portion of which came away. He cut it in half, and found it to be a dermoid cyst filled with hair and teeth. Was that a foetus? was it a rudimentary foetus attached to the testicle? The horse died after its removal, from Peritonitis.

In conclusion Mr. GOOCH thanked them, and said he quite agreed that they must be students all their lives, for the longer he lived the less he seemed to know. He moved a hearty vote of thanks to the President for his occupation of the chair, which was seconded by Mr. SMITH, of Market Rasen, and unanimously adopted.

The PRESIDENT thanked them, and hoped they would do their best to support him during his term of office.

The members afterwards dined together, a choice repast being served up by the *chef-de-cuisine* of the Albion, and the PRESIDENT proposed the toast of "The Queen," which was drunk with acclamation.

#### ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

By invitation of the Mayor of Windsor (Sir Henry Simpson), President of the Royal College of Veterinary Surgeons, and also of the Royal Counties Veterinary Medical Association, a meeting of the above Association was held at the Guildhall, Windsor, on July 29th, when the following members were present:—Sir Henry Simpson (Windsor), Professor Robertson (London), Professor McCall (Glasgow), Professor Walley (Edinburgh), Messrs. Joseph East (Aylesbury), James East (Aylesbury), Henry Lepper (Aylesbury), Sydney Villar (Harrow-on-the-Hill), C. Carter (Guildford), J. Darling (Bracknell), W. Pritchard (London), F. B. Jones (Leicester), F. W. Hanks (Wantage), P. Irving (Chipping Norton), J. F. Simpson, J.P. (Maidenhead), Adrian Jones (A.V.D.), T. B. Goodall (Christchurch), J. G. Castle (Thame), R. J. Verney (Oxford), A. Wheatley (Reading), F. Walker (1st Life Guards), A. H. Santy (Norwich), G. A. Drewe (Abingdon), J. D. Barford (Southampton), J. P. S. Walker (Oxford), F. Raymond (A.V.D.), J. Varney (Winslow), E. C. Howard (Newbury), E. J. Mellett (Henley-on-Thames), C. N. Page (Banbury), R. P. Bull (Deddington), S. H. Slocock (Hounslow), H. J. Hunt (Newbury), A. W. Barlow (Reading), W. Wilson (Berkhampstead), J. A. Rastron (2nd Life Guards), G. H. R. Wilkins (Lambourn), and H. Kidd, hon. sec. (Hungerford).

Visitors present were: Professor Brown, C.B. (Privy Council), Messrs. Bamfield Kettle (Market Drayton), J. A. Woods (Royal Horse Guards Blue), Parker (Birmingham), J. S. Carter (Bradford), J. Burnett (Maybole, N.B.), Jas. Rowe (London), W. Mulvey (London), Herbert Darley (Windsor), W.



Whittle (Worsley), T. Briggs, J.P. (Bury), W. Woods (Wigan), W. Shipley (Great Yarmouth), E. C. Dray (London), W. D. Severn (London), and W. Deane Butcher, M.R.C.S. (Windsor).

After receiving the guests in the Council Chamber, the President invited them to partake of an excellent *dejeuner*, served in the large Hall.

Subsequently the business of the Association was proceeded with.

The SECRETARY read the minutes of the last meeting, which were confirmed. He then announced that he had received a letter from Mr. Roalfe Cox, and a telegram from Mr. Wragg, thanking the members of the Association for their support in returning them as members of the Council.

Mr. MELLETT gave notice that at the next meeting he would move that some of the surplus money in the hands of the treasurer be used for the purchase of instruments for the use of the members of the Association.

*Professor Robertson's paper on "Inoculation as a Preventative against Pleuro-pneumonia."*

Professor Robertson was then called upon by the President to read his promised paper. He said he had very readily consented to lead off a discussion upon inoculation for Pleuro-pneumonia, because he had just recently been engaged in preparing a paper upon the subject for a kindred Association. The paper was not finished, it required some little working out, but he had entitled it "Some remarks on protective inoculation for certain diseases of farm-stock, chiefly applicable to Pleuro-pneumonia." He commenced by stating in effect that the principle or practice of protective inoculation was based on the well-known fact that many of the acute specific diseases of animals occur only once in a lifetime, and that animals having once safely passed through the attack, are afterwards protected from further attacks. Taking the ordinary definition of protective inoculation, as the production artificially in an animal of a state of disease which, while modified so that it shall not endanger life, is yet of such a character that its existence shall confer immunity from attacks similar to that which follows an attack of the disease caught through the ordinary channels of infection, he said that although this was the ordinarily accepted definition of the term, it was probably not that which directly applied to it; it was scarcely a correct statement of the conditions which in many instances were observed to exist. Protection, it was probable, might be conferred on animals against the attacks of the natural or inoculated specific disease where the protective inoculation had not induced any disturbance sufficient to entitle them to say that the disease had been introduced. What they now meant by protective inoculation was that a power of resistance had been by it conferred on the animals against the advance of the natural disease, however it might be assailed. He then dealt with the several modes of treatment of the virus, by which protective inoculation may be secured, and mentioned that it was only within comparatively recent years that protective inoculation for certain specific diseases of animals had attracted attention. The probability of success attending a practice of this nature might be said to have originated with the recognition of the specificness of such diseases, namely, that they were the result of the entrance into the animal system of specific micro-organisms, and not, as formerly considered, from an infringement of dietetic or sanitary laws. That the entire class of specific diseases to which the former was liable might be largely controlled as regards distribution was now scarcely doubted.

Their ultimate suppression was more doubtful, seeing the great difficulties which beset the carrying into operation of those measures which science and experience had now stamped with their approval. He then directed attention in detail to some of the modes of inoculation with respect to the more important of these diseases, the first one he took up being the *specific lung*

fever of cattle, known as *Pleuro-pneumonia*, which, he said, had remained with us in greater or less force ever since its introduction in 1842. He remarked upon its apparent exclusiveness in attacking bovine stock, the uncertainty of the period of incubation, the difficulty of detection, and its power of retaining, in animals apparently recovered, the power of propagation.

Although Dr. Willems was usually credited with having originated the system which bore his name, and justly so, seeing that he probably first carried it into extensive practice, it was known as early as 1820, similar inoculations having been performed by certain scientists in Germany. Noting the extension of the operation practised by Willems to various parts of the world, he said, that having regard to all the difficulties which ever surround such a practice, the results had been so favourable as to entitle them to say that the preponderance of evidence was in favour of its securing what it proposed to accomplish. In Belgium, however, where it originated, it was stated that not to the adoption of preventive inoculation, but rather to the strict enforcement of compulsory slaughter, was that country indebted for its comparative freedom from this terrible cattle disease. Its value as a preventive of disease consisted in the influence exerted on the animal by inoculation, conferring immunity from either a fresh attack of the natural disease or from the effects of a second similar inoculation.

(2) That the danger of propagation was increased by inoculation of hitherto healthy cattle; and (3), that animals only slightly affected with the disease, but having portions of diseased lung existing in affected lung tissue, being inoculated and believed to be protected and placed with healthy animals, are nevertheless capable of spreading disease to those unaffected. Taking these arguments *seriatim*, Professor Robertson said the first was probably negatived by a preponderance of evidence. Facts appeared to indicate that protection could be afforded by the process of inoculation. With regard to the second objection, he said that from evidence adduced there did not seem to be much danger from contamination during the inoculation period. He at the same time allowed that the opposite might be taken up and argued very fairly. And as to the third objection he admitted that post-mortem examination had confirmed the suspicion that long after recovery there remain attached to the animal the power of disseminating disease, and this, he said, was not likely to be effectively provided against, if such cattle were permitted to mix with the healthy.

Passing on to the objects sought to be accomplished by preventive inoculation, he said, the first thing which was demanded of inoculation for *Pleuro-pneumonia* was that it should not cause serious complications or death; and the second was, that it should confer on the bovines operated upon, perfect immunity against the disease. Some experts and others, he said, had stated that inoculation might with advantage be carried out on the really contaminated; others had affirmed that inoculation expedited the declaration of the disease; and a third statement had been made to the effect that where the disease declared itself in animals already inoculated it was of milder form. Experiments, however, had led to the conclusions that inoculation neither modified nor hastened any period of the disease, and that it did not always give protection until a certain length of time had elapsed from inoculation to exposure—thirty days was the period generally asked for.

Coming to the effects of inoculation on the inoculated, he said that although charges had been made that inoculated animals were liable to become centres of infection, and consequently to propagate the disease, he was satisfied—not from personal experience, but judging from testimony and a mass of evidence from several independent authorities—that this could not be substantiated. The chief effects produced in the inoculated were local—



confined to the seat and vicinity of the operation. The period over which the local effects extended was from the fourth to the twentieth day. In a few it would be longer. He then detailed the appearance of the part operated upon during succeeding days, and went at length into the methods of gaining the best material and preparing it for inoculation. He advocated on the lines of Pasteur, namely, by the preparation of a modified virus, safe in its action, capable of being controlled, perfectly innocuous to animals operated on, and satisfactory in its power of preservation. It seemed to him that this might be done by the pure cultivation of micro-organisms which seemed to be invariable in the production of the disease. Some further remarks on material were made, and then the exact situation in the body and mode of making the punctures were dealt with. With the greater number of foreign and home operators, some portion of the tail was preferred, because of the ability with which they could shake off or remove some part of it when inoculated if needful. After stating the various modes of injection, he concluded his remarks on this portion of his paper as follows: Now, gentlemen, the important practical outcome of all that has been, appears to be capable of being formulated in two rather inharmonious statements: (1) That, according to the experimental teaching of several operators in this country, and of a large number on the continent and in our colonies, it is as stated by M. Bouley at the congress at Brussels: "That experimental proof is now made that it is possible to invest animals with immunity against Pleuro-pneumonia by the inoculation with the virus of the disease;" but the immunity so conferred is stated to be of uncertain duration. (2) The testimony, upon a large scale, of certain communities where this disease has existed, where inoculation has been carried out is: that if freedom of a country from Pleuro-pneumonia is to effected, it is not to inoculation so much as to isolation and slaughter of the actually diseased, and probably of such as have been herded with them, that we must trust. In the present state of this controversy if a Bill were introduced to legislate, with a view of modifying the disease in any extensive territory, I should be disposed to advocate that the animals affected should be confined within the district in which the inoculation is to be carried out (applause).

Professor ROBERTSON also dealt with inoculation as a preventive against Anthrax and other diseases.

The PRESIDENT having invited discussion,

Professor MCCALL, while agreeing in most respects with the remarks of Professor Robertson, more particularly in regard to what he had said about Pleuro-pneumonia, wished to ask whether Professor Robertson believed that the virus of small-pox and vaccine virus were one and the same. He believed these were distinct. Could one specific virus so act upon the constitution of an animal when inoculated, or when introduced into the body of the animal by the natural method, as to check and counteract and destroy the action of another specific virus?

Mr. WILSON asked if it were certain what the micro-organism producing Pleuro-pneumonia was.

Replying to Professor McCall, Professor ROBERTSON said he believed that the larger portion of the medical profession regarded the vaccine virus as small-pox virus modified by passing through a cow. He had, however, merely alluded to it as one method of inoculation. He did not say which idea he himself believed in, for he was afraid he must say that they had no very definite conclusion to go upon. In answer to Mr. Wilson he said he did not think it was known what the micro-organism producing Pleuro-pneumonia really was. According to the latest ideas it was thought not to be a bacillus, but a micrococcus or tricoccus.

Professor MCCALL then expressed his opinion that when an animal had once

had Pleuro-pneumonia and recovered from it, it never took the disease again. He believed that after the first attack some portion of the lungs remained affected, and, although the animal might live for years afterwards, at some period or other the disease burst out again. This conclusion was from his own practical experience. Having understood Professor Robertson to say that inoculation simply produced local action, he differed from this opinion. If there is no action beyond the tail, where it is inoculated, then the animal could not by that inoculation be rendered proof against the disease. Then, too, ten days sometimes elapsed before there was any manifestation of the operation. He held that if there was only local action, it would be exhibited at once. He advocated the inoculation of calves as a preventive against the disease just in the same way that children were vaccinated to protect them against small-pox.

In reply to Mr. Wilson, Professor McCALL said that there were variations of temperature during the time the animal was undergoing the disturbance occasioned by inoculation. He then gave a detailed account of some experiments he had recently made at Glasgow, from which he had come to the following conclusion—That an animal once having had an attack of Pleuro-pneumonia never had a second attack; that an animal may be labouring under lung disease by natural method, and may or may not be successfully inoculated; and that if an animal is sound at the time of inoculation, and if a period of a fortnight is allowed after the animal has recovered from the inoculation, it may be with perfect safety put into a herd where Pleuro-pneumonia is raging, and it will stand and be a monument of inoculation.

Professor BROWN, after stating that this question, which had been resuscitated in the last year or two, was thoroughly worked out a quarter of a century ago, spoke of the modes of obtaining virus, and of performing inoculation as mentioned in Professor Robertson's paper, and indicated more refined methods. He pointed out the extreme difficulty of determining what are the micro-organisms connected with lung disease. He further said, that to determine which of the organisms was the particular one upon which the disease depended, involved a life-time of work. As to the efficacy of inoculation, he admitted that evidence to a certain extent went to prove that immunity was conferred by it on the animal system if it was not already diseased, which it very often was, before inoculation; he nevertheless characterised the method of procedure as one worthy of the dark ages of veterinary science. Noting that veterinary surgeons practised the operation generally when an outbreak had taken place, and that when one case was detected there were others in the same herd which could not be detected, he said he objected to inoculation, *because the operation did not in any way interfere with the progress of the disease*. He put it to them, as veterinary surgeons, did they desire to stamp out the disease or not? He strongly advocated the slaughter not only of animals suffering from the disease, but of all those directly in contact with it, as well as those which could in any manner have been exposed to the infection. He urged them to take this course in the interests of agriculture, for, he said, the whole experience of scientific and practical men, as far as it could be traced back, was to the effect that inoculation arrested or modified the progress of the infection for a time, but never stamped it out. And the fact which was true in Dr. Willems' time was still true, when inoculation was practised to stamp out the disease, there it was most rife. These were simple facts which came under his notice as the head of a department which received information from all quarters of the globe. He pointed out that the end and aim of the medical profession was to save life, but the end and aim of their profession should be to put England in the proud position of being, in regard to its live stock, the healthiest country in the world. If they, as members of a profession,



made up their minds it should be, it very quickly would be so. The most valuable animal that ever lived did not exceed three figures in value, and it was a question of three figures against the welfare of the whole race centred in that one valuable animal. His views had not altered for some time. He did contend that against this very imperfect protection, which was of very limited value, as they carried out the operation now, there was to be set the enormous danger of extension of the disease by setting free a number of diseased animals which would be sent over the country with a sort of certificate attached to their hind quarters—that they had been protected from the disease from which they were actually suffering.

Professor WALLEY thought it was a grave reflection upon their profession that many of the contagious diseases of cattle, sheep, and pigs had not been suppressed years ago. He quite agreed with Professor Brown that the lives of animals and the lives of men could not relatively be spoken of, there was nothing to prevent the killing and getting rid of the diseased animals. And yet here they were to-day in the position they were forty years ago, with Pleuro-pneumonia even more rife in some districts, with Glanders more rife, in spite of this being the centre of the efforts of the Privy Council, and with other diseases equally as rife. He pointed out that Pleuro-pneumonia was still existing in Belgium, although it was the home of Dr. Willems. With regard to a second attack, he asked Professor McCall to account for a simple fact that had come under his own observation again and again, namely, that an old lesion appeared side by side with a recent lesion? He argued that if the natural disease did not protect the animal, how could artificial disease protect it? He said most positively that an animal could have a second attack. While he declared himself not to be an opponent of inoculation if the disease were confined within narrow limits, he said that his experience of inoculation and of the exposure of animals to others who had been inoculated and were supposed to be immuned, was that it was a most dangerous thing. So long as inoculation continued they could not wonder that Canadians, for instance, refused to buy our cattle and our herds, and the value having deteriorated they could not wonder that veterinary surgeons were not then called in. If they wanted to be called in they must keep up the value of the animals. If they allowed a disease like this to go about and prevent foreign trade they must expect the decrease in value to continue, and the butcher to be called in instead of themselves. He held that inoculation produced an effect on the blood as well as local disturbances, swellings generally being found in various parts of the body. He noted a remark of Professor Brown's that this matter was worked out twenty-five years ago. How, he asked, had it been settled?

Professor BROWN said he meant that when the thing was worked out the conclusions come to twenty-five years ago were exactly the conclusions they had come to now. In the quarter of a century they had not advanced one single step.

Professor WALLEY concluded his remarks by urging that the disease must be ruthlessly stamped out, and then perhaps having crushed it, there would be a revival of trade among agriculturists, so far as cattle were concerned.

Mr. DEANE BUTCHER, F.R.C.S., having been invited by the President to take part in the discussion, thought it was a great pity that the medical profession did not learn a great deal more of what they might learn from the veterinary profession. To him it had been most interesting and instructive to listen to men who had had the apparatus for experiment before them all their lives, and had made such good use of it. Speaking of vaccination, he said that, from his own experience, he could say that if a calf were inoculated with Small-pox, and if they took matter from that calf for vaccination they would get a vaccine in all respects similar to the vaccine of the calf.

Many of the medical profession refused to use any other vaccine than that which came from vaccinated calves. That was an instance of vaccine modified by being passed through another animal, and he hoped in course of time many other diseases might be treated in the same way. He then said that if they got a local symptom, they considered something had been introduced that was not vaccine. What they wished to do was to introduce a drop of vaccine into the blood without a wound, and the more the external inflammation, the less seemed to them to be the preventive efficacy of the virus. As to the point about the second attack, he mentioned, in several contagious diseases in the human system, the first attack did not prevent a second. In conclusion he put before them the question whether it would not be wise to inoculate every calf as soon as it was born, and not wait for an outbreak of disease.

On the motion of Mr. RAYMOND, seconded by Mr. WHEATLEY, the debate was adjourned.

The PRESIDENT said he was glad that they had been favoured with a discussion from such eminent men as they had there that day. They could not expect to have them there on another occasion. He moved a cordial vote of thanks to Professor Robertson for his very valuable paper.

Mr. WILSON seconded, and the resolution having been passed, Professor ROBERTSON returned his thanks.

A vote of thanks to the President for his services in the chair concluded the proceedings.

The company afterwards partook of tea, served in the council chamber.

H. KIDD, *Hon. Sec.*

#### NORFOLK AND EASTERN COUNTIES VETERINARY ASSOCIATION.

THE nineteenth half-yearly meeting of the above society was held at Great Yarmouth on July 19th, the President (Mr. W. Shipley, M.R.C.V.S.) in the chair.

Members present:—Messrs. T. Auger, Wymondham; F. Golden, Marsham; J. Hammond, Bale; R. Howard, Thetford; G. Hunting, Stalham; H. Newson, Beccles; J. D. Overed, Blofield; A. H. Santy, Norwich; S. Smith, Lowestoft, F. W. Wragg, London; and the Hon. Secretary.

Visitors:—Professor Robertson, Principal R.V.C.; Messrs. Carroll, Yarmouth; P. Turner, Old Newton, Suffolk; Bostock, 19th Hussars; W. Shipley, jun., student; J. B. Martin, Rochester.

Letters regretting their inability to attend were received from Dr. Fleming, Sir H. L. Simpson, Mr. Banham, Mr. Carter, and Mr. Briggs, and one from Mr. R. Cox, thanking the members for their support in his re-election to the Council.

The minutes of the last meeting were read and confirmed.

Mr. SHIPLEY read a short but very instructive and practical inaugural address.

Designs for a stained glass window to R.C.V.S. were submitted to the meeting. Considerable discussion ensued as to the appropriateness of one sketch. It was finally decided, on the motion of Mr. OVERED, seconded by Mr. HOWARD, "That this association approves of the design of window laid before them, and that Mr. Santy be instructed to bring it before the Council at its next meeting; and should the Council approve of the design, Mr. Santy is to instruct Mr. Constable to place the window in the College at the price named."

#### *New Members.*

Mr. Turner, Old Newton—proposed by Mr. HOWARD, seconded by Mr. OVERED.



Mr. T. E. Barcham—proposed by Mr. SANTY, seconded by Mr. HUNTING.

The PRESIDENT next called upon Professor Robertson for his discourse on "Preventive inoculation of certain diseases of farm stock," commencing with Pleuro-pneumonia.

Professor ROBERTSON read a most elaborate and exhaustive paper; produced much evidence both *pro* and *con*, recounting a great number of experiments which have been tried at various times and places, and finally gave it as his opinion that in Pleuro-pneumonia inoculation is not sufficient to arrest the spread of the disease. He believes it to be thoroughly effective amongst the herd affected, and even if some of the animals are slightly diseased it will arrest its progress; but if such animals, slightly tainted, are brought in contact with a fresh herd not inoculated, they will be found capable of contaminating such animals. He therefore considers that when Pleuro-pneumonia breaks out in a herd of cattle, they should be inoculated, but kept perfectly isolated, and fattened as soon as possible.

Professor ROBERTSON next referred to Anthrax pure and simple, and that form of Anthrax commonly known as "Quarter-ill." After referring to experiments of Pasteur and other eminent scientists in France, he described some which he had been recently carrying on in this country with reference to Quarter-ill. The results were much more satisfactory than in Pleuro-pneumonia, and if the intravenous injection method of inoculation be adopted it was an almost certain preventive. The results of his own experiments went to prove that when the above method of inoculation was adopted, the animals enjoyed perfect immunity from contagion, even when the virus was injected into the blood.

A most lengthy and animated discussion followed.

Mr. SANTY and Mr. OVERED gave particulars of a number of experiments which they tried some years since for Pleuro-pneumonia. The results were very satisfactory, and in very few cases did any untoward consequences follow.

Mr. OVERED operated with Mr. Smith, of Norwich, on behalf of the Norfolk Chamber of Agriculture, on over 200 head of cattle; he introduced the serum from diseased lungs into the tail with a three-cornered cup-shaped instrument.

Mr. HOWARD asked the proportion of muscle juice and water used as intravenous injection in Quarter-ill.

Professor ROBERTSON said he believed it to be one in ten.

Mr. WRAGG asked if any microbe had been found in Pleuro-pneumonia. He was of opinion that inoculation in this disease was more than useless, as it was very likely to retain rather than eradicate the disease from the country.

Professor ROBERTSON said a microbe had been found, but could not say if the microbe was peculiar to Pleuro-pneumonia.

Mr. BOSTOCK gave an interesting account of Anthrax as he had seen it in Bengal, noting that, although Bengal is so much infested, Bombay is almost free. The most effective method adopted for stamping it out is to dig up the soil and remove the cattle for a time off it.

Mr. SANTY proposed, and Mr. HAMMOND seconded, that a most cordial vote of thanks be given to Professor Robertson for his extreme kindness in meeting them and giving such an excellent discourse on a subject of such vital importance to them as practitioners.

Professor ROBERTSON having responded, the next place of meeting was arranged to be at Norwich.

On the motion of Mr. OVERED, seconded by Mr. HOWARD, Mr. Wragg kindly consented to read a paper on "Examination of Horses as to Soundness."

Mr. SHIPLEY proposed, and Mr. WRAGG seconded, that Professor Robertson be elected an Hon. Associate of the Society.

Professor ROBERTSON having kindly consented to become one, the meeting terminated with a vote of thanks to the Chairman for having so ably conducted the meeting.

R. S. BARCHAM, *Hon. Secretary.*

#### NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

A SPECIAL meeting and annual dinner of this Association was held in the County Hotel, Newcastle-on-Tyne, July 13th, 1887, the President (Mr. D. Dudgeon) in the chair.

*Present*:—Messrs. A. Chivas, Cowbridge; J. E. Peele, Durham; Thos. Jack, Sunderland; C. S. Hunting, South Hetton; Wm. Wheatley, South Shields; G. Dudgeon, Sunderland; J. Gofton, North Shields; Wm. Grieve, Blaydon; T. Foreman, Leadgate; J. B. Nisbet, Fence Houses; D. McGregor, Bedlington; Wm. Awde, Stockton; J. W. T. Moore, Whitley; J. E. Tudor, South Shields; W. Stevenson, Whitburn; C. Gresby, Beamish; H. Hunter, G. Elphick, C. Stevenson, Wm. Hunter, and the Secretary (A. Hunter), Newcastle-on-Tyne.

*Visitors*:—Professors Brown, C. B. Duguid, Williams, Walley, and Robertson; Messrs. Greaves, Manchester; Goldschmidt, Copenhagen; Thompson, Sheffield; Thompson, Aspatia; Robson, Penrith; Mulvey, London; Bell, Carlisle; and H. E. Wilkinson, Newcastle-on-Tyne.

The minutes of the previous meeting were taken as read.

Professor WILLIAMS then introduced for discussion the subject of Open Joint, and recommended the following treatment, which had been very successful in his own practice: first sling the horse, and if the wound is recent, cleanse thoroughly and apply a weak solution of corrosive sublimate (1 part in 200 of water), then dust the part with iodiform powder, and apply a piece of lint steeped in varnish (brown shellac preferred), then bandage, and do not remove it unless there is very great pain. If the joint has been open for a few days inject into the joint a weak solution of corrosive sublimate, and then treat as above. Professor Williams then proceeded to relate some novel symptoms witnessed in a recent outbreak of Influenza.

After these subjects had been shortly discussed, Mr. MULVEY proposed a vote of thanks to Professor Williams for his interesting paper, and moved that the further discussion of it be left over until the next meeting, which Mr. NISBET seconded, and it was carried unanimously.

After a vote of thanks to the Chairman the meeting terminated.

The annual dinner of the Association was subsequently held in the County Hotel, the President (Mr. D. Dudgeon) in the chair, and Mr. Henry Hunter in the vice-chair. After dinner the usual loyal toasts were given, and a very enjoyable evening spent, which was enlivened with the harmony of several of the members and guests present.

The meeting was one of the largest and most successful ever held by this Association, and reminded old members of the meeting held during the last visit of the Royal Agricultural Society to this town.

ANDREW HUNTER, *Hon. Sec.*

#### GLASGOW VETERINARY COLLEGE.

THE summer session of this institution terminated on June 27th, and on July 16th, 18th, and 27th the oral examinations of the Royal College of Veterinary Surgeons were conducted within the Museum of the College. The Board of Examiners included—Dr. Fleming, F.R.C.V.S.; Mr. J. Roalfe Cox, F.R.C.V.S.; Mr. Duguid, F.R.C.V.S.; Mr. Pritchard, F.R.C.V.S.; Mr. J. Vaughan,



F.R.C.V.S.; Mr. W. A. Taylor, F.R.C.V.S., Manchester; Mr. W. B. Walters, F.R.C.V.S., Army Veterinary Department; Mr. Geo. A. Banham, F.R.C.V.S., Cambridge; Mr. Archd. Robinson, F.R.C.V.S., Greenock; Mr. Henry W. Stevens, M.P.S., F.R.C.V.S., and Mr. Richard Rutherford, F.R.C.V.S., Edinburgh. The following gentlemen were also present as *ex-officio* members, viz.:—Principal M'Call, Professors Cooke, M'Queen, and Limont, Glasgow Veterinary College. Twenty-nine students presented themselves for the "A" or first examination, and of this number nineteen were successful in passing, viz.:—Messrs. Beanland, C. Dunn, T. Dunn, Ferrie, Gregg, Gilmour, Griffen, Graham, Kinnear, Maxwell, M'Dougall, J. H. Wilson, Potts, Peat, S. R. Thompson, D. Warnock, M. Wilson, W. Wilkinson, and J. Watson. Dr. Limont and Mr. Marcus Stevenson passed the "B" examination, and Mr. Robert B. Scott, Ayr, obtained the diploma of the Royal College of Veterinary Surgeons. Medals granted by the Highland and Agricultural Society of Scotland, and certificates of merit by the College were awarded in the different branches of study as follows:—Botany—Medallist, Mr. J. Beanland; first-class certificates, Messrs. D. Warnock, Thompson, and Ferrie; second-class certificates, Messrs. M. Wilson, Maxwell, C. Dunn, and M'Dougall. Chemistry—Medallist, Mr. Warnock; first-class certificates, Messrs. Thompson, Beanland, M. Wilson, and Dunn; second-class certificates, Messrs. Maxwell, J. Peat, Kinnear, and Pitcairn. Materia Medica—Medallist, Mr. Warnock; first-class certificates, Messrs. M. Wilson, Beanland, and S. R. Thompson; second-class certificates, Messrs. B. Ferrie, J. M'Dougall, and H. Potts. At the close of the examinations, the Chairman intimated that the following students had passed with "great credit," viz.:—Dr. Limont, Messrs. Gregg, Warnock, and M. Wilson.

#### BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

THE Eleventh General Meeting of the above Society was held at the Bush Hotel, Carlisle, on the 1st of July, with A. J. McIntosh, Esq., President, in the chair.

Members present were Messrs. Carlisle, Bell (senior), Bell (junior), Dawson, McCauly, of Carlisle; McConnell, Castle Douglas; Harrison, Warcop; Croudace, Haltwhistle; Little, Abbey Town; Coats, Carruthers, Brampton; Potts, Donald, Wigton; Thompson, Aspatia; Armstrong, Penrith (Secretary). Visitors: Messrs. Ashley and Wilkinson.

Letters of apology were read from the following:—Messrs. Greaves, Manchester; Young, Cockermouth; Walker, Kirkby Lonsdale; Watson, Ireby; Tallentire, Skelton; Rendall, Barrow-in-Furness; Chalmers, Longtown; Pears, Langholm; Pears, Penrith.

The minutes of the previous meeting were then read by the Secretary, and confirmed.

Messrs. McConnell, Castle Douglas; McCauly, Carlisle; Carruthers, Brampton, were unanimously elected members of this Society. Messrs. Roberts, Liverpool; Mulvey, Bishop Auckland, were also unanimously elected honorary members of the Society.

Mr. BELL moved that the copy of rules for the loan of instruments—the property of the Society—be accepted as drawn up by the Committee.

Mr. ARMSTRONG seconded the motion, which was carried unanimously.

Mr. HARRISON, Warcop, then read a highly interesting paper on some of the diseases, etc., of the uterine system in bovine animals, with short discourses on Milk Fever and Red Water.

After a few introductory remarks on quackery and the advertising of veterinary specialties, Mr. Harrison proceeded to read his paper:—

MR. CHAIRMAN AND GENTLEMEN,—The organs of generation in the female

which we have to take into account when called upon to give advice or administer treatment are the *vulva*, *clitoris*, *meatus urinaris*, *vagina*, *uterus*, *fallopian tubes*, and *ovaries*. A simple or complex disarrangement of any one or more of these organs in any female animal leads to results which not only tax our skill in arriving at what may be called a probably correct diagnosis of the cause of the affection, but very frequently there is danger of not being able to satisfy our employer with either any treatment we may adopt, or any explanation we may tender to him *viva-voce*. The first abnormal condition of one of those organs which I shall bring to your notice is one which is very frequently observed, especially in large herds of shorthorn cattle. A farmer or stockowner informs you he has such and such a heifer which is continually or almost so in heat, very restless, and either will not take the bull, or if she does, no conception follows. A glance at an animal of this description tells us she is characteristically imperfect in her generative apparatus; vagina contracted and small, and scarcely any appearance of either udder or teats, heavy fleshy head, thick neck, and what may be called bullock horns. From their continual restlessness they are not only a torment in themselves, but a nuisance amongst a stock, as they not only will not thrive themselves, but hinder others from doing so. What are we to do if called upon to prescribe for such an animal? I have not myself examined *post-mortem* the uterine organs of such an animal, but authorities tell us that the cause of this condition is due to excessive vascularity of the *ovaries*, amounting to what may be termed chronic congestion. Being of opinion that very little good can be done, I have confined my treatment to a couple or so of doses of purgative and diuretic medicine, and recommended a good clearance out the best way practicable. Bleeding, repeated purgatives, counter-irritants, liniments or embrocations across the loins and along the back have been recommended, but viewing the general conformation of such an animal, such treatment is very likely to disappoint a client, and not give much credit to a veterinary surgeon.

The next complaint I offer to your notice is one not unfrequently seen in a general country practice, and occurs mostly in cows, seldom if ever in heifers during the period of gestation. It is not much noticed during the earlier periods, but towards the approach of the full term, the cow is noticed to be unusually large in the abdomen, so much so that twin calves are expected. It consists in an excessive and undue secretion of *Liquor amnii* of an abnormal character, due most likely to a morbid condition of the uterine mucous membrane. It has been described under the appellation of Dropsy of the Uterus, but as Dropsy does not as a rule find its seat on mucous surfaces, I suggest that this view of the case may be fairly discarded. The attention of the veterinary surgeon is usually called when the cow is preparing for parturition, labour pains have been visible for some hours, perhaps a day or two, but no attempts to calve. Not unfrequently the empiric aid is sought, when it is found there is no passage, the Os uteri being closed, and it is concluded there is nothing but an operation to part the mother and fœtus, hence the call for veterinary aid. But I hardly need tell many of you how careful to be when approaching these cases; generally we find the cow is in no way prepared for calving, the udder is flaccid and empty, the pelvic ligaments are scarcely if any relaxed, no discharge of any kind has been seen from the vagina. The cow lies a good deal, and often from her large size has difficulty in rising and walks with a staggering gait, but at the same time she chews her cud and her appetite is in no way impaired. I hardly need tell you that as long as this state of things lasts it is unwise to be too hasty, at the same time it is as well to instruct our client that when changes occur we will be prepared to assist in removing the calf. A cow may linger on a week or more in this state, but eventually the pelvic ligaments begin to relax, and



a slight and gradually increasing discharge escapes from the vulva, the udder becomes more distended, and generally the signs of parturition become more pronounced. On examination, the Os uteri will be found to be gradually dilating, so much so that two or three fingers may be introduced. At this stage some practitioners resort to injecting some water, which is said to break the foetal membranes in four or five hours, when they proceed to extract the calf. Empirics, I suppose, add a little colouring matter to the water to make it look more mysterious, and at the same time make a prophecy, but this kind of humbug I think professional men should despise. In some instances if the cow has not been properly watched, the foetal membranes may have broken, and the Liquor amnii may have escaped, and perhaps a large portion of the placenta be protruding. The cow having thus become reduced in size, presents a sickly look, labour pains gone, and the calf has to be extracted in whatever position it may be by manual dexterity, unaided by any effort on the part of the mother. The calf is generally dead and looks as if it had been macerated in hot water for some time.

The practice I would suggest to the meeting is, in such cases, as soon as the Os uteri is sufficiently dilated to admit a hand, to cut the foetal membranes, thus letting out the water, then bring the calf into position by means of cords or hooks, and extract it. It is as well to remove the placenta also, and I generally give two or three doses of whisky, or other stimulant, to assist in restoring a balance in a weakened and deranged circulation. Also order plenty of good nourishment. By this aid, and by injecting some antiseptic into the uterus, the cow is very often saved, while without such auxiliary treatment she might have died from exhaustion or from uterine absorption causing Septicæmia. As to the cause of this condition of the uterine mucous membrane, which conduces to this unnatural and excessive secretion of Liquor amnii, I have no opinion of my own, but seeing that it is not only a fact, but quite possible for deleterious matter to be conveyed in the act of coition, which in a variety of ways may act specifically, and also since this new Pasteurian philosophy of bacilli or bacteria has become such an important element in elucidating the causes of disease, I would ask this meeting in the discussion to express its views as to whether or not, from causes undeterminable, the bull may have contributed the noxious element which upsets the natural order of things pertaining to a healthy gestation.

Unfruitfulness in cows and heifers is a subject which I think may fairly be noticed by a meeting of this description, seeing that veterinary surgeons are not unfrequently asked to give advice on this tiresome and vexatious question. In very many cases the causes as revealed by any history to be gathered from the owners of such animals, are almost always surrounded by circumstances of a mysterious character; consequently, unless the members of this Association are very far in advance of me as to knowledge, any assistance we can render must be strongly tinged with empiricism or guess-work. If satisfactory results happen to follow the treatment, we get the benefit of knowing all about it; but if, on the contrary, as very frequently happens, our endeavours are futile, sentiments the reverse of complimentary are showered down upon us, more especially if any expense has been incurred. In endeavouring to find a cause for this want of disposition to conceive, many theories have been propounded; foremost, I may mention high breeding, the occlusion of natural habits, and feeding. Further it has been argued that if by any means conception is established in these kind of cases, not unlikely the cow will abort. Now, in relation to high breeding being a cause, I daresay many of you will have observed the fact that the animals served by high pedigree bulls very often disappoint, either in not conceiving at all, or aborting at an early period of gestation, and the oftener this pro-

cess is repeated the more confirmed the habit becomes. But if, as sometimes happens, the owner, either by advice or chance, takes the animal to a bull of lower grade, ten to one on she conceives at once and carries the embryo the full time. If this view is conceded, the point for the meeting to discuss is the difference in procreative or other specific quality of the seminal fluid of high-bred bulls and those of ordinary breeding. I do not myself pretend to offer any physiological hypothesis bearing upon the potential quality of what may be called "blue bloods," but I think, gentlemen, there is one circumstance in regard to stock management, more especially in holdings where high farming proclivities prevail, which we, as a profession, cannot be blind to, and that is the further stock is reduced from natural food and natural habits to artificial feeding and luxurious pampering, the more liable they are to become defective in fruitfulness, and as, so far as I am aware, no medical treatment can be administered with certainty of success, I think, even at the risk of giving offence, the best thing we can do in the case is to advise that the animal should be turned out to grass in company with a male animal used and kept for ordinary service. I may just mention that M. Bouillard found in mares which were constantly sterile, that after the injection of a glass or two of warm water into the vagina, they were impregnated at the first covering. His argument seems to be, that water at the temperature of the blood holds in suspension the seminal fluid, and preserves its fecundating power for a longer period. There are, in connection with this subject of unfruitfulness in cows and heifers, certain causes which may sometimes be traced to atmospheric influences, such as very hot weather, etc., but as causes of this description are in a great measure beyond human control, I shall not dwell on them. There is, as I have no doubt many of you have seen, an accidental cause, due to structural derangement in the uterine passage, causing complete imperforation of the vaginal track up to the os—a condition peculiar to white animals, though why it should be peculiar to this colour I am not able to explain. Possibly some gentleman present may be able to throw some light on the subject. Many of those animals come regularly in heat; but there are no "œstral" discharges of any kind escaping from the vulva, in fact, before matters come to a crisis, there is frequently a large accumulation suspended in the uterine cavity. As a natural consequence, decomposition of this fluid takes place, producing contractions of the organ, leading the owner, in some instances, to suspect either foul play or injury from coition with a bull. In fact, any attempt at service is followed by alarming symptoms, such as continual strainings, arched back, and more or less difficulty in micturition, urine slightly mixed with blood.

*(To be continued.)*

### EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

At the meetings of the Court of Examiners of the Royal College of Veterinary Surgeons held on 4th, 5th, and 6th July, 1887, the following students from the Royal Veterinary College were admitted members of the profession.

Mr. Thomas B. Exley...	...	...	...	...	Leeds.
„ G. Goodliff...	...	...	...	...	Huntingdon.
„ J. R. Bathew	...	(Not yet complied with Rules of College).			
„ George Hurford	...	...	...	...	Plumstead.
„ W. H. Flook	...	...	...	...	Hampstead.
„ E. W. Larnder	...	...	...	...	Gravesend.
„ J. A. Legg	...	...	...	...	London, N.
„ W. A. Clifford	...	...	...	...	Plumstead.



Mr. T. E. Barcham	...	...	...	...	Paston, Norfolk.
" Joseph Healy	...	...	...	...	West Barnet.
" Louis Mitchell	...	...	...	...	Leeds.
" A. C. Newsom	...	...	...	...	Charlton, Kent.
" Arthur Crapp	...	...	...	...	Reading.
" Arthur Moore	...	...	...	...	Rochester.

The following students passed their Second Examination on the 30th June and 1st July, 1887.

Mr. F. B. Ditmas.	Mr. S. J. Williams.
" W. A. Stainton.	" *A. D. Lalor.
" J. Sherley.	" *W. Cakebread.
" C. H. Millman.	" J. A. Leggett.
" *S. Vincent.	" W. W. Norwood.
" S. Codrington.	" S. T. Groom.
" F. W. Willet.	" J. H. Hind.
	Mr. M. W. Gatward.

The following students passed their First Examination on the 27th, 28th, and 29th June, 1887.

Mr. T. R. Vanderplank.	Mr. A. W. Bland.
" B. O. Nettleship.	" W. E. L. Brame.
" W. T. Brown.	" *E. C. Storey.
" M. Jacobs.	" †E. D. Johnson.
" *E. Porter Smith.	" J. E. Abbott.
" †G. J. Harber.	" *H. Millward.
" J. Millward.	" J. O. Cobbledick.
" B. L. Secker.	" †T. Slepper.
" *A. Le Sueur.	" *J. W. Coe.
" T. W. Peake.	" R. Halpin.
" E. W. Oliver.	" A. E. Seath.
" T. W. Greenlaw.	" G. Upton.
" J. C. Callow.	" *A. Bramall.
" *E. E. Martin.	" H. S. Eglington.
" *J. Gosling.	" J. H. Halseberg.
" J. Wilson.	" *H. D. Chorlton.
" J. Brown.	" F. W. Emery.

Mr. W. A. Welch.

Marked thus \* passed with Great Credit.

" † " " Very Great Credit.

ARTHUR W. HILL, *Secretary, R.C.V.S.*

## THE EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS IN SCOTLAND.

At meetings of the Scottish section of the Board of Examiners, held in Edinburgh and Glasgow, on and between July 15th and 28th, the following gentlemen passed their Final Examination, and were admitted members of the Royal College of Veterinary Surgeons:—

### *Dick College.*

Mr. E. Watson	..	..	..	Belfast.
" E. Morgan	..	..	..	Nonington, Kent.
" R. Tibaldi	..	..	..	India.
" J. Troughear	..	..	..	Heskett, Cumberland.
" W. Lawrence	..	..	..	Durham.
" R. Edmundson	..	..	..	Frodsham, Kent.
" J. Hawke	..	..	..	Cockermouth.

*New Veterinary College.*

Mr. T. Watson	..	..	..	Beverley.
" H. Race	..	..	..	Manchester.
" F. Armstrong	..	..	..	Penrith.
" A. D. Dunbar	..	..	..	Aberdeen.
" J. Dickie	..	..	..	Irvine.
" T. Chalmers	..	..	..	Annan.
" W. R. J. Mitchell	..	..	..	New York.
" R. Shenton	..	..	..	Bakewell.

*Glasgow College.*

Mr. R. B. Scott	..	..	..	Ayr.
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The following passed their Second Examination:—

*Dick College.*

Mr. J. R. Jones.	Mr. J. O'Donoghue (G. C.).
" J. Lyons.	" W. G. Barnes.
" C. Nicholson.	

*New College.*

Mr. H. R. Love.

*Glasgow College.*

Mr. M. J. Stevenson.	Mr. Alex. Veitch.
" W. Limont, M.A., M.B. (G. C.).	

The following passed their First Examination:—

*Dick College.*

Mr. S. Clarke.	Mr. J. C. Rowlands (G. C.).
" W. McCartan.	" S. Stockman (G. C.).
" H. G. Rodgers.	" Fred. T. Finney.
" A. Dowdall (G. C.).	" G. H. Yates.
" A. J. Robertson.	" A. E. Mettam (V. G. C.).
" J. Gilmore (G. C.).	" A. Richardson (G. C.).
" J. Hewson.	" A. S. Wallace (G. C.).
" L. Fairer.	" J. M. Christy.
" W. A. Potts.	" P. Conacher.
" W. Hawthorne.	" T. W. Rogers.
" G. B. Langran.	" J. Bell (G. C.).
" W. McQuatt (G. C.).	" W. Ackroyd.
" E. Montgomerie.	" F. Barling.
" J. E. Miller.	" R. H. Stephenson.

*New College.*

Mr. T. Eastwood.	Mr. J. W. Rider.
" T. H. Dale.	" E. Kellett.
" A. D. Minor.	" J. Barker (G. C.).
" E. Franklin.	" W. Stothart (G. C.).
" F. Booth (G. C.).	" R. Davidson.
" F. D. McLaren (G. C.).	" F. Dales.
" E. F. De Tong.	" A. W. Dows.
" J. Clanchy (G. C.).	" J. B. Robertson (G. C.).
" E. H. Curbishly.	" F. Hutchinson.
" W. Kendall.	" J. W. Bate.
" G. Stevenson.	" T. M. Parker.
" E. P. Edwards (G. C.).	" C. Ward.
" W. J. Bushnell.	" M. Cassidy.
" T. G. Duggle (G. C.).	" R. C. Hughes.



*Glasgow College.*

Mr. J. Beauland.	Mr. W. E. Maxwell.
„ C. J. Dunn.	„ J. McDougall.
„ T. Dunn.	„ H. Potts.
„ B. Ferrie.	„ J. W. Peatt.
„ J. Gregg (G. C.).	„ S. R. Thompson.
„ R. Gilmour.	„ D. Warnock (G. C.).
„ T. H. Griffiths.	„ J. H. Wilson (G. C.).
„ J. M. Graham.	„ W. Wilkinson.
„ J. Kinnear.	„ J. Watson.

Those marked G. C. passed with great credit.

Those marked V. G. C. passed with very great credit.

R. RUTHERFORD, F.R.C.V.S.,  
Secretary Board of Examiners.

ROYAL AGRICULTURAL SOCIETY.

At the monthly meeting held on August 3rd, Mr. ALLENDER stated that a certificate signed by Professor Brown, Professor Robertson and Mr. Duguid, had been received certifying that no outbreak of contagious or infectious disease had occurred among the animals exhibited in the show-yard at Newcastle.

Professor BROWN had presented the following report:—

“*Pleuro-Pneumonia*.—Recently this disease has increased very considerably in England, but appears now upon the decline in Scotland. During the four weeks ending July 23rd, there were forty-one fresh outbreaks reported in England, and 105 cattle attacked, whereas in the four preceding weeks there were only twenty-four fresh outbreaks, and fifty-six cattle attacked. In Scotland in the four weeks ending July 23rd, there were twenty-three fresh outbreaks, as compared with thirty-three in the preceding month, and the number of cattle attacked was 134, as compared with 153 in the four weeks of June.

“*Swine-Fever*.—In Great Britain during the four weeks ending July 23rd, there were 687 fresh outbreaks of this disease reported, and 3,352 swine attacked by it. Of these 1,965 were killed, 1,093 died, and 174 recovered.

“*Anthrax*.—During the period above referred to there were twelve fresh outbreaks of Anthrax, in which thirty-three animals were attacked.

“*Rabies*.—There were thirty-eight cases of this disease reported during the four weeks above-mentioned, twenty of which were dogs, and the remaining eighteen were deer.”

In reply to a question relating to Milk-Scarlatina, Professor BROWN had stated that the inquiry was suspended pending a reply from the Treasury to the application for the sum necessary for the carrying on the investigation.

The report having been presented,

Mr. MARTIN asked Professor Brown in what counties in England were the attacks of Pleuro-Pneumonia.

Professor BROWN could not at the moment answer the question, but he wished to bring before the Society a fact of which they had all along been afraid, namely, the extension of the infection in some cases from Scotland into this country, with the result that the outbreaks during the last month have doubled as compared with the preceding one.

The Earl of POWIS drew attention of the Council to a Parliamentary paper which had recently been published in reference to diseased cattle brought over from Ireland. A large company at Glasgow, which brings a great many cattle over to Scotland, complained that the Scottish local authorities had issued orders which make it impossible to introduce Irish store cattle. It appeared that the disease was exclusively generated in Dublin, where there

were a large quantity of dairy cows. These were kept in a bad state, with the result that the disease had never thoroughly been eradicated. In the summer these cattle were sent out to different places, even as far as ten miles from Dublin, for grazing. The suggestion contained in the paper was that the Irish Government should take measures to thoroughly stamp out the disease within the precincts of the City of Dublin by making it a separate infected area; and till that was done the Scottish authorities were quite right in restricting the movement of stock cattle from Ireland into Scotland. The North of Ireland and Ulster said they had no disease, and did not like this, but so long as the infection is allowed to go on in Dublin they must take the consequences of it, and he (Lord Powis) thought that English opinion would in this matter back up the Scotch. Until the disease is stopped within the City of Dublin, it would be wise and prudent to stop all cattle coming from thence.

In reply to Colonel Kingscote, Professor BROWN said that he had given instructions for the preparation of a paper showing the place where the disease had spread, and from what point the infection had extended. With regard to Lord Powis's statement, it would be interesting to the Council to know that an Order had been passed which would give power to the local authorities in any district in which Irish cattle might be landed to regulate the landing of those animals, and the movement of them in that district after landing. That would enable them to discriminate between the different parts of Ireland. If they chose to allow animals from Ulster to come in they could do so, while, on the other hand, if they chose to restrict them from other parts they had power to do so. This had been found necessary in consequence of the occasional introduction of the disease from Ireland. There was no doubt about this fact, as it had been detected on the landing places in this country. The Irish Government did not object to this course being taken, but unfortunately they did not see fit to attempt anything like measures of extermination with regard to the disease. His conviction was that it would be useless for the Privy Council in this country to attempt to apply this system till arrangements could be made with the Irish Government for securing their full co-operation.

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## Jurisprudence.

### VETERINARY SURGEONS AND DOG LICENSES.

ON Saturday, July 23rd, before Mr. Partridge at Westminster police-court, Mr. George Bailey, M.R.C.V.S., practising at 24, Cromwell Place, South Kensington, appeared to an adjourned summons issued at the instance of an Inland Revenue officer, named Hatton, for having kept on the 26th of April last a certain dog without having in force a license as required by the statutes in that behalf, whereby he incurred a penalty of five pounds. The case had been before Mr. Partridge on a previous occasion, when the same defence was raised as that to-day, but the learned magistrate decided on convicting, and fined the defendant ten shillings. The defendant at once gave notice of appeal, whereupon Mr. Partridge adjourned the matter until to-day.

Mr. Powell was counsel for the Inland Revenue, and Mr. James MacConnell was now counsel for the defence.

It appeared from the evidence of Hatton that on the date mentioned he called on the defendant, who showed him the dog in question, and at the same time informed the officer that the dog had been sent to him to be operated on for *Prolapsus uteri*, which, it was admitted, was quite apparent. The defendant, however, refused to disclose the name and address of the owner of the dog, stating that in ten years' practice he had never before been asked to do so.



Mr. MacConnell for the defence pointed out the important principle involved in the case to veterinary practitioners. To the defendant, himself, it was a very serious matter, as no less than two hundred dogs were on an average under his treatment annually; to hold him liable to have licenses for any number of dogs that might be in his infirmary at any given time would practically compel him to relinquish that branch of professional practice altogether. The case fell within sec. 8 of 30 and 31 Vict. cap. 5; and his contention was that a veterinary surgeon could not under any reasonable interpretation of the section be said to "keep" a dog belonging to another person. The person to whom the dog belongs and who pays for its treatment and keep is the person within the meaning of the section who "keeps" it; "keeping" a dog clearly meant a keeping for protection or pleasure. The sub-section, which provided that the person "in whose custody, charge, or possession," a dog is found is to be deemed "to keep" the same, only raises a presumption rebuttable by evidence to the contrary. Nor did the statute impose any duty on veterinary surgeons to disclose the names and addresses of owners of dogs under their care, or to help the revenue in any way. The learned counsel contended that on proof that the dog was sent to the defendant for treatment the summons must be dismissed.

Mr. Partridge acceded to this view, but said he should require strict proof of the facts relied on by the defence, and as the defendant was not himself a competent witness under the statute, the further hearing was adjourned until the 6th instant for proof of the ownership of the dog and its being sent to the defendant for treatment.

On this date George Preator, a clerk lately in defendant's employ, was called, and proved that the dog in question belonged to a Mr. Skinner, and that it had been sent to the defendant for treatment.

Mr. Partridge said the owner himself should be called.

Mr. MacConnell replied that his evidence was unnecessary; besides, in a large number of cases, as where ladies were owners, or the owners reside at a distance, it would be practically impossible to procure their attendance. The evidence was conclusive, and no imputation was or could be cast against the truthfulness of the witness. The learned counsel invited the magistrate to decide the matter one way or the other, to convict or dismiss, on the evidence as it stood, so that the point might be authoritatively settled in a superior court. Mr. Partridge declined to do so and adjourned the matter *sine die*.

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## Army Veterinary Department.

*Gazette, July 29th.*

THE HONOURABLE ARTILLERY COMPANY OF LONDON.—Veterinary Surgeon Edward Coleman to be Veterinary Surgeon of the First Class.

At the *l  vee* held by His Royal Highness the Prince of Wales at St. James's Palace on July 16th, Veterinary Surgeon (First Class) J. W. Evans was presented by the Adjutant General.

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## Obituary.

The Secretary of the Royal College of Veterinary Surgeons reports the following deaths:—B. Barnolby, M.R.C.V.S., Warlaby, Brigg, graduated 1842; J. Edge, M.R.C.V.S., late Leek, Staffordshire, graduated 1867; F. E. Meek, M.R.C.V.S., Pateley Bridge, Yorkshire, graduated 1885; W. Lomas, Buxton, M.R.C.V.S., graduated 1871.

It is with feelings of the deepest regret that we announce to the profession the death of one of its oldest and most respected members. Thomas Walton Mayer, F.R.C.V.S., who graduated in 1835, died at his residence, Victoria Road, Aldershot, on August 7th, in the seventy-third year of his age.

Mr. Mayer commenced his career as a private practitioner at Newcastle-under-Lyme, and very shortly after obtaining his diploma was appointed Secretary to the Committee of Veterinary Surgeons, formed for the purpose of securing a legal position for the profession, and by whose exertions the Charter of 1844 was obtained.

In recognition of his valuable services, Mr. Mayer was appointed a member of the original Council, which position he held with honour and credit for ten years. He was also five times elected a Vice-President during the period extending from 1854 to 1875.

In 1855, being compelled by heavy pecuniary losses and severe family affliction to relinquish his practice in Newcastle, he obtained a commission in the Army, and served with the Turkish contingent during the Crimean war. He was afterwards appointed Veterinary Surgeon to the Royal Engineer Train, which position he held until 1870, when he was compulsorily placed on retired pay on account of age.

On retiring from the Army, Mr. Mayer was offered and accepted the appointment of Professor of Veterinary Medicine and Surgery at the Royal Agricultural College, Cirencester, and was also elected a member of the Board of Examiners. He held these positions until increasing age and bodily infirmity obliged him to relinquish them. He then went to reside in the town of Aldershot, and passed the remainder of his declining years amongst his military and civilian friends, by whose assistance he was enabled to establish a small practice.

During the whole of his exemplary life, Mr. Mayer possessed in a marked degree the confidence, esteem, and friendship of all who knew him. His simple and child-like nature, generous disposition, courteous manner, and kindness of heart, endeared him to every one. He was a worthy representative of his profession, a firm upholder of its honour and integrity, and in his earlier years a liberal contributor to its literature.

The funeral of our late colleague, which was of a most impressive character, took place, with military honours, on the 9th ultimo, at the Aldershot Camp Cemetery.

The coffin containing the remains of the deceased was placed upon a gun carriage drawn by six horses, and preceded by a firing party and the troop band of his old corps, the Royal Engineers, under the command of an officer, four officers of the Army Veterinary Department acting as pall-bearers. A number of officers, non-commissioned officers, and men followed, and in rear were the chief mourners in two coaches.

Dr. Fleming, C.B., P.V.S., was represented by the Inspecting Veterinary Surgeon, Aldershot, Colonel Jelf, R.E.; I.V.S. Walters, Appleton, and Hinge; V.S., 1st Class, Duck, Poyser, and Wilson; V.S. Hagger, Savage, Short, and Rutherford.

The death is announced at Charleston, U.S.A., on July 26th, of H. W. Ravenel, LL.D., the eminent American botanist who, in 1880, was, with Professor Gamgee, appointed by the United States Government to investigate the cause of the Texas Fever of cattle. The learned and exhaustive report of this gentleman established the fact that the disease did not originate from eating a poisonous fungus, to which, up to that time, it had been attributed.

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## Notes and News.

PROTECTIVE INOCULATION FOR ANTHRAX.—M. E. Nocard has recently published some instructive statistics relative to the results of the anti-anthrax inoculations practised during the last five years with "vaccine" prepared in the laboratory of M. Pasteur. The following figures will be noted with interest:—

	Cattle Inoculated.		Mortality.		Percentage of Loss.
1882 .....	29,916	.....	82	.....	0·35
1883 .....	20,501	.....	64	.....	0·31
1884 .....	22,645	.....	87	.....	0·37
1885 .....	21,073	.....	107	.....	0·50
1886 .....	22,113	.....	64	.....	0·28

Before the introduction of M. Pasteur's method the percentage of mortality among animals attacked was over 5 per cent., which by inoculation has been reduced to below  $\frac{1}{2}$  per cent. This is a benefit to agriculture of which the French may well feel proud, especially as other nations are evincing their keen appreciation of the discovery by adopting measures to utilise it. A special laboratory for the preparation of the "vaccine" has been opened in Turin; Vienna, Madrid, and Buenos-Ayres, also have similar laboratories in full activity, and others are on the point of being formed.

DOG CARRIAGES.—The London and North-Western Railway Company, with that praiseworthy enterprise which has always distinguished them, have had designed a new carriage for the conveyance of dogs, to meet the necessities of what has now become so widespread and popular an institution, viz., dog showing. The arrangements for the comfort and safety of the doggy passengers are most complete. Ventilation has been amply provided for, both in roof and sides of carriage, and an attendant travels in each car. Enamelled troughs are provided, and a constant supply of water, and the arrangements for securing cleanliness are complete. There need be no more smothering of £100 dogs if these capital cars are taken advantage of by dog owners.

INOCULATION FOR CONTAGIOUS PLEURO-PNEUMONIA IN GOATS.—A curious method of inoculation, for the prevention of a virulent lung disease, known as "Bayoor," very prevalent among goats in Morocco, is described by Consul Payton. A portion of diseased lung is placed in a slit made in the ear of a goat not affected, and a slight cautery is applied. Great faith in this supposed preventive is entertained by the Toubalt tribe, who are great breeders; and it is said that last year, when their neighbours lost a large number of goats, they saved nearly all theirs. The disease does not attack sheep, which, like cattle, are said to be remarkably free from disease in Morocco.

JUSTICE TO THE VETERINARY PROFESSION.—The *Field*, of August 6th, in remarking on veterinary surgeons' evidence, in a leading article, adds:—"And now, while alluding to the subject of veterinary surgeons, may it be permitted to us to enter a protest against the practice of calling them, on formal occasions, 'veterinaries,' or 'vets.' Loose phraseology has supplied us with slang names for nearly all professions and trades, but these designations should not be admissible in newspapers or in the witness-box. The veterinary profession stands a great deal higher now than it did in former days, and the social position of its members is very much in advance of what it was when the fleam and a list of curious ointments formed the stock-in-trade of the ordinary farrier. Recent legislation, too, has done tardy justice to the profession, who, when referred to in public, are as much entitled to their proper title as a clergyman, a physician, or any other professional man."

**THE MILITARY HORSE SUPPLY.**—In the event of a war in Europe, Germany would require 400,000 horses; France, 375,000; Austria, 200,000; and Russia, 400,000. Should there be a war, therefore, the Powers would require 1,395,000 horses to begin with, and more from time to time as the animals should be killed or used up in service. England has no more horses than are necessary for her every day needs.

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## Correspondence.

### EXAMINERS AND EXAMINEES, FROM A GENERAL PRACTITIONER'S POINT OF VIEW.

SIR,—I think it will not be inopportune if this question is further investigated at the present time. Let us approach it and discuss it as fairly, freely, and justly as we can. I prefer not to criticise too minutely or too severely the action of any individual examiner, nor yet that of the students, although much might be advanced in the cause of the one as well as the other. I would rather take broader grounds, and argue the question on general principles. In the first place, is the education of the student everything it ought to be or what it might be? In this I do not limit the inquiry to the student's scholastic attainments, but include his professional education. In the second place, is the examination of the student everything it ought to be or what it might be? And, thirdly, what kind of education and examination is best calculated to make the most useful and clever veterinary surgeon? These are plain questions, and, I think, well to the point; and I must say I wish some abler man than myself had hold of my pen and had undertaken the duty of writing upon them.

1st. Is the education of the student everything it ought to be or what it might be? Some of the students have a much better school education than others; they have a great advantage over those less educated—their minds are more refined, they are more enlightened, can understand lectures better, and with more ease become proficient in the science of their profession. This in itself is a great advantage, but if this high-class education is possessed, and practical or manual tuition has been left out during youth, such an one will be at a great disadvantage through life. But if high-class education, along with manual tuition, be given before he goes to college, then everything appertaining to the profession will become natural to him. It is all easy to him, and if he is a man possessing ability and application, he is sure to become a useful member of society—a clever and creditable veterinary surgeon.

2nd. Is the examination of the student everything it ought to be or what it might be? An examiner should be an educated man, possessed of a calm temperament, strong perceptive faculties, with urbanity and courteous manners—a man of mature age and experience. He must be one who well understands every phase of the veterinary profession. A man with no knowledge or only a limited knowledge of the veterinary profession, however highly educated he may be, is not a desirable person to be an examiner of the veterinary student. When in the act of examining a student, it is well to ascertain the amount of veterinary knowledge he possesses generally, and judge him on the whole. It is highly objectionable for an examiner, if he happens to take a student on some particular subject (possibly quite an unimportant subject), finding that he is weak on this subject, to keep him on it and to decide his case on that subject alone. Such student may possibly be well up on every important subject, and, in fact, on every other subject. Would it not, I would ask, be much more rational and fair to the student to leave that subject at once and take the student on several others, and judge of him ac-



cording to what he really is on the whole? It would be equally unjust to the student for an examiner, who happens to take a student on some particular subject on which he is evidently well up, and keep him on that subject the whole time, and decide from that alone, although such student may really be very deficient on all or most other subjects.

I have always held, and do so still, although I know there are those who are opposed to me in these views—viz., that when a student has passed a satisfactory examination on any particular subject at any examination, that such shall be considered sufficient, and such student shall be exempt from further examination on that subject; so that he may devote his whole mind and energies to the other subjects, and by doing so he may acquire more knowledge and become more thoroughly proficient on the remaining subjects. Surely it will be admitted this must be an immense gain.

It is known that students have passed with great credit (now marked "Very Good") on one subject at one examination, and in three months were considered very indifferent upon the same subject. Then, again, on a third examination, three or six months afterwards, he passes upon the same subject. Such are the anomalies arising out of casualties and varying circumstances of the case, that I venture to say that if any dozen successful students who, having gained their diploma, were to be again examined a month subsequently, one half of them would, in all human probability, be rejected. Such being the case, I say, let us in the future avoid this dilemma or incongruity by letting it to be understood, if a student passes a good or satisfactory examination on any one subject, that such should be allowed to stand, and that he shall not again be put through the ordeal of examination on that subject, and that such student shall be apprised of it at the time.

3rd. What kind of education and examination is best calculated to make the most useful and clever veterinary surgeon? I am a strong advocate for the youth who it is intended shall become a veterinary surgeon to have a good general education, and to be brought up as much as possible amongst sick and lame horses and cattle, so as to become familiar with their habits and their nature both in health and in disease. Remembering that youth is the special period in life when habits are formed, he should have every opportunity possible given him to work amongst sick and lame horses, mostly on his own account, for two or three years; have the why and the wherefore constantly explained to him before going to college. This is what I call the practical education; it is a course or process of daily training in general practice, which is not taught in the same manner at college. There are men who, it would seem, have an interest in promulgating a different doctrine, who say this is not teaching practice; they say that teaching anatomy, physiology, and chemistry is the practice, and that what I advance as practical knowledge is really only the theory of our profession. Such men may call it what they like, it does not matter to me what they call it, so long as it is insisted upon that the student shall and must have an opportunity to learn his profession properly and efficiently. I hold that the teachers are naturally and properly the legitimate parties to be looked to to prepare the student, and see that he is fit to undergo the test of examination with a reasonable prospect of success. If a student is deficient in his practical knowledge, I hold it is the bounden duty of the teachers to firmly and strictly insist on it that all students must possess this knowledge by one means or another (I care not what method is employed) before such student is permitted to present himself before the examiners.

The third session at the college was instituted for the purpose of inculcating practical knowledge, but after about fifteen years' trial it is found that students are less efficient, and there is a greater average percentage of rejections now than when there were only two sessions. I have assisted for

over twenty years in the election of every examiner, and have no hesitation in saying that each examiner has been selected for his known fitness to perform the duties. Some of them being on the Council it is found of immense advantage and convenience in explaining to the Council matters in connection with the examinations. Then as to specialist examiners, a cognomen which is a great favourite with some professors, this would most certainly be jumping out of the frying-pan into the fire. Their chief recommendation is their utter divergence of opinion on every subject they treat upon. One specialist with great pretensions expounds his view or theory on a particular subject; then another eminent specialist, with greater pretensions, at once scatters this theory to the winds; a third specialist then advances theories that squash them both; and then where are you? It has been urged as an objection that some of the present examiners have crotchets; it is not universally admitted that every specialist is a man full of crotchets. The members of the present board or court of examiners are men incapable (knowingly) of doing a student an injustice. They are for the most part the best men picked out from amongst that band of men chosen by the whole profession as the most efficient men to be found for the governing body and representatives in the veterinary profession. We expect these men to perform their duties with honour and fidelity, without fear, favour, or affection.

It is the Council's province to provide the examiners, and it is the teachers' province to provide the students. I have on many occasions been present at the examinations both in Edinburgh and in London, and could give many instances in which students have acquitted themselves most creditably. I could also, on the other hand, give many instances in which students have acquitted themselves with discredit. I will here relate an instance:—

A student, who was evidently an educated, intelligent person, went about his work well, and with his manners and demeanour was quite satisfactory; he might be twenty-four or twenty-five years old. One of the examiners requested him to examine a horse as to soundness. The horse was led in hand on a nice straight, level road; it was a bright day at noon, everything was still and quiet; before the horse had gone five yards one of the examiners said to me in an undertone, "Do you see anything?" I replied, "The horse is lame, that is quite evident." The horse was trotted many times to and fro, and the student manipulated each limb calmly and deliberately over and over again. At last he came and stated, "I find a curb and lameness on the off hind, and lame on his fore feet, the effect of fever in the feet." The examiner said, "Will you see him trot again, and be quite sure about it." This was done, and he reiterated his opinion. The horse was then taken into the stable and head turned to the door; he examined the eyes, mouth, nostrils; then he stated, "I find a little discharge from the nostrils, and an ulcer in each nostril." The examiner then asked, "Well, what do ulcers in the nostrils indicate? are they a serious matter?" His reply was, "No, they are of little or no consequence." I saw his certificate afterwards, embodying the above opinion; in reality there was not a vestige of a curb or lameness on the off limb, and he was perfectly sound on his fore feet, while the limb (the near hind) with a spavin of considerable size and dead lame on it, he passed sound. There were no ulcers, they were merely the openings of the nasal ducts. I ask, what would any profession soon become if such men as these (and I am sorry to say there are many such) were given a diploma? I would ask, is it not high time we give this matter our earnest consideration, and for pity's sake discontinue the irrational, unreasonable, and unjust system of expecting students to be fully efficient in practical knowledge, when many of them have had little or no opportunities of getting it, nor yet express surprise at the great percentage of rejections? And since the



question is propounded with such persistency, "How is it that men are appointed examiners who do not possess the necessary qualifications?" I think the inquiry may be made with equal and even greater reason in it, "How is it that men are appointed teachers who do not possess the necessary qualifications, and whose teachings are so barren and unsuccessful?"

T. GREAVES, F.R.C.V.S.

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#### EXAMINERS.

SIR,—Allow me to state that the assertion: "Mr. Robinson is really the only Examiner to whom students object" is as monstrously inaccurate as many other strange things which have recently appeared in print, with a view to vilifying that gentleman, and indeed other members of the Board of Examiners. During my College career I myself heard every member of that body objected to in turn; and is it not well known that whatever subject a student is deficient in, or at whatever table he makes a bad appearance, to the Examiner in that subject is given all the credit for the student's failures? But even these students—a large number of them at least will, in their confidential hours, tell you that "the Examiner was not to blame," that "he asked no question he should not have asked," and over and over again have I been told by students who had been rejected by Mr. Robinson, that in going before him I had "nothing to fear," as he was a "nice fellow, and a fair Examiner."

Sir, such was my experience when the time arrived. I recognised in him a gentleman, "a nice fellow and a fair Examiner," and I look forward to the time when the cloud which his vilifiers are endeavouring to raise will have passed away with themselves into oblivion, leaving Mr. Robinson in the sunshine of esteem which he rightly merits. VERITAS.

Newcastle-on-Tyne.

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#### VETERINARY EXAMINATIONS.

DEAR SIR,—In your report of the Southern Counties Veterinary Medical Association's meeting, I notice with much surprise that a Mr. Martin, whilst seconding a motion condemning the Edinburgh students in the recent riots, made the following remark—"It was a proverbial saying—'If you cannot face the London examination, go to Edinburgh; you can get through there easy enough.' He supposed they had been of late more rigid and searching in their examinations, and consequently the students found it was not so easy to pass."

Such remarks in my opinion are not only a direct insult to veterinary surgeons having gained their diplomas at Edinburgh, but also to the Examining Board of the R.C.V.S., a most gentlemanly and conscientious body of men.

Are we to understand from Mr. Martin that those gentlemen have gone to Edinburgh and granted our diplomas to men, knowing that they have not been tested or examined up to the standard required by our Council nor equal to that which the London men undergo. No, we cannot believe that; we have more faith in the Board than to do so; but we can believe—and know—such sayings not to be proverbial, but profoundly ignorant. I also see that Mr. Martin speaks of making the Edinburgh students come to London to be examined. I don't for a moment uphold such disgraceful conduct as was shown by some of those students, but I think it most unfair to talk about punishing all the students and their parents for the deeds of a certain set. Moreover, we must remember that the Examiners are appointed for the students' benefit, and not *vice versa*.

If Mr. Martin wishes to compare veterinary surgeons with a London training to those with an Edinburgh one, he has only to look in this month's (August) JOURNAL, and he will see that in the Fitzwygram Prize Competition the gainers of the first and second prizes are both from the Edinburgh New Veterinary College.

WALTER J. FLETCHER, M.R.C.V.S.

### A CORRECTION.

SIR,—In your journal of May last I wrote stating what was known as to the extent of Rabies in Egypt. In the third paragraph a mistake appeared, which I beg to correct. The child in question died in December, and not in October, 1886.

I shall feel extremely obliged if you will insert this correction in your next issue.—Yours, etc.,

WILLIAM LITTLEWOOD.

Board of Health, Cairo, July 26th.

### TO CORRESPONDENTS.

A YORKSHIREMAN.—Your letter is too strongly personal, and its publication would not be beneficial to any one.

A. C. COPE.—Our rule is not to publish communications which have appeared, or which are intended to appear at the same time, in other journals. The reason for this is obvious.

S. WILTSHIRE, SOUTH AFRICA.—Facts are now altogether against the spontaneous development of Glanders, and it is recognised that the malady is always due to contagion.

A number of articles, reports, and letters are held over to next month.

### Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from "Veritas"; W. H. Brookes, Fulbeck; F. Raymond, A.V.D., Woolwich; A. W. Hill, London; Prof. McCall, Glasgow; "A Yorkshireman"; W. J. Fletcher, Sheffield; W. Littlewood, Cairo; T. Chambers, Dudley; A. C. Cope, London; A. Spreull, Dundee; J. Armstrong, Penrith; R. Rutherford, Edinburgh; S. Wiltshire, Maritzburg, Natal; B. McInnes, Charleston, U.S.A.; C. C. Rowe, London; J. A. Nunn, A.V.D., Natal; R. S. Barcham, Norwich; H. Kidd, Hungerford; A. Hunter, Newcastle-on-Tyne; W. B. Walters, A.V.D., Aldershot; T. Greaves, Manchester; H. J. Hunt, Newbury; W. G. R. A. Cox, Newcastle-on-Tyne; J. Cammack, Kimberley.

BOOKS AND PAMPHLETS: *G. Fogliata*, Manuale di Ippo-Podologia; *G. B. Longstaff*, Hydrophobia Statistics; *E. Dèle*, La Pleuro-pneumonie a Borgerhout; *F. Semon* and *V. Horsley*, On an Apparently Peripheral and Differential Action of Ether upon the Laryngeal Muscles; *T. Walley*, Hints on the Breeding and Rearing of Farm Animals; *The Horse, Cow, and Dog*, with Animal Characteristics.

JOURNALS, ETC.: *Clinica Veterinaria*; *Recueil de Méd. Vétérinaire*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Annales de Méd. Vétérinaire*; *Lancet*; *British Medical Journal*; *Echo Vétérinaire*; *American Live Stock Journal*; *Edinburgh Medical Journal*; *Révue Vétérinaire*; *Journal de Méd. Vétérinaire*; *Hufschmied*; *Journal of National Agricultural Society of Victoria*; *Live Stock Journal*; *Mark Lane Express*; *Thierarzt*; *Army and Navy Magazine*; *American Veterinary Review*.

NEWSPAPERS: *Retford and Gainsborough Times*; *Devizes Chronicle*; *Daily Nebraska State Journal*; *Dundee Advertiser* (two copies); *Charleston Weekly News and Courier*; *Peterboro' Advertiser*.



# THE VETERINARY JOURNAL

AND

## Annals of Comparative Pathology.

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OCTOBER, 1887.

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### UTERINE HERNIA IN A FOX-TERRIER BITCH : UNASSISTED PARTURITION.

BY CHARLES SHEATHER, F.R.C.V.S., LONDON.

ON Saturday afternoon, June 4th, a very handsome fox-terrier bitch, twelve months old, was brought to me by her owner, with the following statement:—Her period for parturition was due about Wednesday, June 8th; he had taken her out for a little exercise, when, in crossing the entrance to a mews, a hansom cab-wheel had run right across her body at the loins. Immediately she rose he noticed that the left flank was very pendulous, and he could feel the puppies close under the skin, and one appeared to be under the skin of the left thigh. He brought her for examination and advice.

An examination yielded the following results:—A rupture of the abdominal wall in the left inguinal region tending towards the linea alba; descent through this rupture of the left cornu of the uterus. Two live foetuses were in close proximity to the skin, their movements being easily noted; one had descended under the skin inside the left thigh, which was ecchymosed. The bitch was apparently free from pain, particularly quiet and tolerant of manipulation, and would walk about if allowed.

It was decided not to interfere surgically with her until absolutely necessary, but it was anticipated that in all probability Cæsarean section would in the end have to be undertaken. She was carefully bandaged, received some sedative medicine, and instructions given to feed her on beef tea and oatmeal gruel, small quantities at a time.

Professor Axe had an opportunity of seeing her on Sunday morning, and he also expected that Cæsarean section would become imperative. On Monday there was little change, the left side of the

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abdomen presented extensive ecchymosis, and three foetuses could be distinguished, two of which moved ; the bandage was re-applied, and preparations were made to carry out the operation, should it become necessary, under the most favourable conditions.

During the night the bowels acted for the first time since the accident, the faecal matter being coated with blood-stained mucus.

At eleven p.m. on Thursday labour pains came on, and at 4.15 a.m. on Friday the first puppy was born, and in succession five others. Nos. 1, 3, 5, and 6 were alive, No. 6 dying during expulsion, while Nos. 2 and 4 were dead, black, had little hair on them, but were not foetid. She received no assistance except the careful attention of the owner, Mr. A. Bacon, and between the times of the accident and her delivery, fed well on the diet allowed her, and was very quiet, occasionally getting about in spite of precautions to keep her still.

The hernia disappeared immediately after delivery, and on June 18th the rupture could not be distinguished, but there was from the time of delivery to this date œdema of the left thigh, which subsequently cleared out, and the bitch and her three pups are in the best of health.

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### LAMENESS IN THE HIND LIMB; DIAGNOSIS OF THROMBUS.

BY THE SAME.

ON September 15th, 1884, a bay mare, the property of H. P. M—, Esq., was sent by rail to my infirmary, with the request that I should examine her as to a lameness in the near hind leg and give advice.

The patient was a very handsome, well-bred bay mare, about nine years old, possessed of high courage, great power, and activity ; at the same time her manners were perfect, she was very tractable and invaluable as a tandem leader. She showed slight Stringhalt of the ordinary type in both hind limbs, and had done so ever since she was purchased three years before ; she had never suffered in any way during this period, as far as could be discovered.

On making an ordinary examination it was found that when quietly trotted she showed a very slight lameness of the near hind limb ; in fact, it was only just perceptible. Physical examination of the affected leg, including the foot, revealed no cause, in my opinion, for the very slight lameness, and when she was in motion it was noticed that the hocks and fetlocks were evenly flexed, that the toes were carried free of the ground to an even height, that the



lengths of stride of the hind limbs were equal, that there was no drooping of the hip, and that the tail was well carried. There was no alteration in temperature of any part of the limb, and the sinking movement of the pastern was perfect.

I communicated with the owner, commenting upon the unsatisfactory results of my examination, asking permission to drive her, and to be given a detailed account of the earlier symptoms.

From an interview, I discovered that the mare had been perfectly well until about three weeks before being sent to me. She had been idle in a loose box for a fortnight, her owner being in London, but on his return into Hampshire she was harnessed one morning to go as leader, and began her journey, but after going about a quarter of a mile a slight lameness appeared and progressively got worse. She was at once taken back, rested for two or three days, and tried again with the same result; she was then sent on to me in London.

I had her harnessed to a light Beaufort cart, and drove her into the inner circle of Regent's Park very quietly; then pushed her along at about twelve miles an hour. After passing about half-way round I noticed her failing to advance the near hind leg so well as she had been doing, and to be labouring with the whole quarter; I still pressed her, and she became so lame as to necessitate my stopping.

She had travelled nearly twice round the circle, a distance somewhat under two miles. I drew up at the side of the road to make an inspection of her hind leg, and to avoid puddles, as it had been raining; she was thoroughly wet under her body and about her thighs and legs, and I noticed vapour rising from her off hind leg, but none from her near hind leg. Dirty though she was, I put my hand on her near hock and found it quite cold, contrasting to a great degree with the other. Perspiration in beads was oozing through the hair of the near quarter, and rolling down; it was not an evenly diffused perspiration, as between the beads the hair was dry, and it was localised to the near quarter.

On passing round to the off side of the mare, I noticed a marked absence in the near hind leg of the distension of the Vena saphena, usual after exercise, and particularly apparent in well-bred, high-couraged animals when the hair of the legs is wet. After watching a few minutes, I noticed it to slowly fill to the capacity of its fellow.

I had obtained a very strong clue as to the nature of her malady.

I walked her back to the infirmary, and in a quarter of an hour had her trotted in hand, when she went nearly sound. My conclusion was that obstruction existed somewhere in the arterial

system of the near hind limb, and that the circulation was rendered very defective by movement. I concluded my examination that day by a rectal exploration, with a view to determine, if possible, the seat of the arterial obstruction. I was rewarded by finding no pulse in the iliacs of the left side, but a bounding throb of an exaggerated character in the posterior aorta.

After carefully studying the case, I communicated my diagnosis to the owner, and recommended that the mare should be destroyed.

As might be expected, the owner was not disposed to act upon this advice at first, and while he was arriving at a decision, I took the opportunity of sending the mare to the Royal Veterinary College, as she was a most interesting case, where Professor Axe confirmed my diagnosis.

On October 14th I received instructions to submit the mare to an examination at the hands of an eminent veterinary surgeon. This was done, and I wrote, when sending the mare, giving all the details of what I had observed, so that an off-hand opinion might be guarded against; she, however, was returned the same day with the recommendation to fire and blister both hocks, as she had spavin in both. At the request of a medical friend of the owner the mare was kept in a loose box, and for a fortnight received a few grains of *Pulv. fol. digitalis*.

Early in November the left submaxillary artery became occluded, while the pulse was good and normal in the other.

About the 20th of November I received permission to destroy the mare; this was done at the *Post-mortem* House of the Royal Veterinary College, and Professor Axe made the autopsy in my presence.

The external iliac artery of the left side was nearly occluded by a yellowish-white firm laminated thrombus; the thrombus extended to the origin of the *Arteria profunda femoris*, and occluded the opening into the *circumflex ilii*, and partially that into the internal iliac, and projected into the posterior aorta.

An examination of the endothelial surface of the external iliac artery led to the discovery of several spots of *Atheroma*, a condition not so apparent in the submaxillary artery. Is it possible that this condition of artery may influence nutrition locally, and so induce Stringhalt? Perhaps an exhaustive exploration of the arteries of the body may have led to further discoveries. The heart and lungs were free from any abnormal condition likely to give rise to emboli. The interest of the case centres in the symptoms, one of which is worthy of note; when the mare was trotted as fast as she could go, it took seven to eight minutes to bring on the extreme lameness and perspiration, and a rest of a similar



period restored her to her former condition. The certainty and regularity in the production of the extreme lameness were most marked, and form a link of diagnostic value. Mr. William Hunting also saw the case, which I think worthy of record, as I believe it to be the first time that a lameness has been *definitely* diagnosed as arising from thrombosis, although the condition has been recognised at *post-mortem* examinations.

I think a careful study of the symptoms observed in this case may assist us, if only in the negative direction, in differentiating cases of hind-limb lameness, which are difficult of diagnosis.

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## PURPURA HÆMORRHAGICA, A SEQUEL OF ACUTE RHEUMATISM.

BY R. W. BURKE, M.R.C.V.S., ARMY VETERINARY DEPARTMENT,  
JUBBULPORE, INDIA.

IN the admirable article by Professor Limont in the July number of the VETERINARY JOURNAL, I do not notice any reference to the proper classification of the disease, perhaps owing to the professor's wish to confine his inquiries to the subject of the organisms peculiar to it. Little, however, can be inferred from any microscopical observations, as the professor notes, except that the pathology of Purpura Hæmorrhagica is worth looking into; and I fail to see how we may reasonably gauge the significance of any organisms found associated with this disease, while we remain ignorant of its classification. I do not think that text-books have enlightened us much in the past on this subject. Veterinary writers commonly classify Purpura Hæmorrhagica in the horse among general derangements of the blood produced by unknown causes. From time to time, however, one meets with instances of marked Purpura Hæmorrhagica following on cases of Acute Rheumatism. I have lately seen examples of this in a pony belonging to General East, commanding Saugor district; in a horse belonging to a Mr. Cooke, Superintendent of Surveys; in a battery horse lately under observation; which were treated in this station, and in several others treated at Saugor, in all of which cases Acute Rheumatism appeared to act as the direct exciting cause of the cutaneous trouble, generally in the form of diffuse œdema, papular eruptions, ecchymoses and extravasations, amounting in some cases to hæmorrhage, which was sanguineous or sero-sanguineous in character. The symptoms of Rheumatism in some, though not in all of my cases, persisted long after the disappearance of the cutaneous lesions. I have examined the blood in several cases, and found several kinds of

organisms, numerous separate cocci, as well as in groups and slender rods, but as no inoculation experiments were conducted with these, I do not personally attach any importance to their presence. The pathology may be summed up briefly as Acute Rheumatism, characterised by certain cutaneous and other results of multiple thrombosis and embolism. This was at least Trousseau's view of these symptoms of Acute Rheumatism in man, and it is the view accepted by the foremost physicians of to-day in England. It must be remembered that Rheumatism may occur without any joint symptoms. These irregular forms of Acute Rheumatism are, I have reason to believe, more common in our animals than is generally supposed, which have hitherto been vaguely described under the head of "blood disorders of an unknown origin."

Alkaline treatment proves most efficacious. Tincture of steel, iodide of potassium, salicylic acid, etc., which are recommended for Rheumatism, have been found most useful in cases of Purpura Hæmorrhagica in the horse.

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## DISLOCATION OF THE SHOULDER IN THE HORSE.

BY J. A. NUNN, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, NATAL.

ATTENTION having lately been drawn to dislocation of the shoulder in the horse, perhaps the following case, the only one I have ever seen, may be of some interest to your readers. The animal, if I recollect right, was an Australian gelding, of the 6th Dragoon Guards (Carabineers), and formed part of the escort that conveyed the ex-Ameer of Cabul from Fort Basawal, where I was stationed, to Lundi Kotal, on his way to India in November or December, 1879. The horse took fright and bolted, jumping or stumbling down a bank, four or five feet high, on the left-hand side, into a rice field, which was soft mud, three feet deep. From this he was pulled out on to the hard road, with difficulty. I saw him very shortly afterwards, and found the near fore limb, if my memory serves me rightly, shorter than the other, resting on the toe, no weight being put on it, with about three or four inches behind, and the same above, where the point of the shoulder would be normally situated, a deformity and hard swelling, which, in the confusion and hurry, I mistook for a fracture of the neck of the scapula. Unlike the cases published, the animal was utterly unable to use the limb, which swung uselessly when made to walk. As an attack was expected every minute, I had him destroyed, and examined the part as well as I could with a pocket-knife, when I found that the supposed fracture was, in reality, the dislocated



head of the humerus, which had been dislocated outwards and upwards, lying on the outside of the scapula, under the ridge. The capsular ligament was extensively ruptured, but I was unable to make a further examination on account of the near approach of the enemy. When the country became quiet I rode out to try and obtain the specimen, but the jackals and vultures had been before me.

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## COCAINE AS A LOCAL ANÆSTHETIC.

BY J. T. KING, M.R.C.V.S., BOURNEMOUTH.

LAST month my advice was asked respecting the condition of the off eye of a horse belonging to a medical gentleman of this town. On examination the eye presented a swollen and bulging appearance of the upper lid; there was a copious discharge of tears, and almost complete closure of the eyelids. It was impossible to elevate the lid, so I determined to reduce the inflammatory condition by giving a dose of aloes and warm fomentations, etc., to the part. This treatment was continued for two or three days; at the expiration of that time I was enabled to examine the eye more easily. I found on the internal surface, deeply imbedded in the structure of the lid, a fibrous tumour, which covered a great part of the eyeball. I informed my client that excision of the growth was the proper treatment to adopt; he gave his consent, and I arranged to operate on the next day.

The animal, a high-spirited, well-bred beast, was brought to my infirmary, and I decided to use a ten-per-cent. solution of cocaine as a local anæsthetic. The groom was positive the operation could not be accomplished unless the horse was cast.

I painted the conjunctiva with the cocaine, and then hooked the lid back, after waiting a minute or so I applied another painting, and then dissected the tumour out. The horse stood perfectly still during the operation and did not evince the least sign of pain. He walked home as well as ever directly after, the general health not being at all interfered with.

After about a week's ordinary treatment the animal was put to work.

It seems that cocaine will prove a most valuable and useful agent in veterinary practice where a local anæsthetic effect is required.

Since the above, I have used cocaine in a case of lacerated wound of the upper eyelid of a horse. The operation was most easily performed whilst the animal was under the action of the drug, the passage of the needle through the torn edges of the wound being quite painless.

## CASTRATION.

BY T. HUNTER, V.S., SKENE, ABERDEENSHIRE.

THE castration of horses, etc., seems such a simple operation that one feels astonished at so many complicated modes and appliances being in vogue for its accomplishment. I have seen the operation performed by the screw, the actual cautery, the caustic clams, torsion, ligature, suture, the ecraseur, etc., but have never become enamoured with any of these, feeling convinced that the simpler any operation can be performed the better. I look upon all these plans, then, as quite unnecessary, too mechanical, clumsy, and unscientific, and find no need for any machine or instrument, with the exception of a keen-bladed knife used freely and fearlessly upon previously scrupulously-cleaned tissues, guarding the spermatic artery, which is held tense and gradually scraped, each stroke of the knife going towards the animal, which drives the blood backwards, and in about a minute there is a separation, with the rough and ragged ends of the muscular coat of the artery contracted and curled in, and the blood-course effectually stopped. In bulls of all ages, standing on their feet, I prefer to sever the cord *minus* the knife, between the finger and thumb, using the nail of the latter for scraping.

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## A HERMAPHRODITE.

BY THE SAME.

IN the beginning of the grass season, the overseer to Mrs. Prosser, Lochside, Skene, called on me complaining of the behaviour of a yearling quey, which was tormenting, right and left, all the rest of the cattle so indecently that she had to be housed. I found that there was a rudimentary penis, about an inch in length, on the vulva, and that it was almost constantly in a state of erection; and in passing urine, the fluid was squirted right up into the air. On roughly manipulating the udder, which was well developed, I felt a firm body on each side, which I at once recognised as testicles, or tumours of some sort. All the same, I had her cast and secured for their removal, and on cutting right through the posterior glands of the udder on each side, about three inches deep, close on the abdomen, I came upon a couple of well-developed testicles, which I extracted, seemingly complete in every anatomical particular. I put a single suture in each gaping wound, and without anything more ado, the animal was thoroughly cured of its bad behaviour.



## REMITTENT ANTHRAX.

BY R. W. BURKE, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, LAHORE.

IN accordance with the Adjutant-General's telegram, dated Simla, 16th December, 1886, I left Cawnpore for Meerut on the night of the 19th idem, and after seeing the Inspecting Veterinary Surgeon on my arrival the following day, and being shown round the cases by V.S. (First Class) C. Clayton, A.V.D., began to study the clinical characteristics of a disease which had prevailed in Meerut with undiminished severity since August last. I may mention that I had already examined, previous to my arrival in Meerut, the blood of patients which was forwarded for my opinion from time to time, and pronounced the disease to be Anthrax, an opinion I was afterwards able to corroborate with the progress of my inquiries made on the spot. My stay in Meerut was a little over five weeks. I beg to submit herewith a report of my investigations into the nature of the disease, considered under the following headings:—

*Symptoms.*—There is always some difficulty in fixing the period of first attack, as animals affected with this disease are seldom noticed ill until the eyes appear dull, with drooping of the eyelids, and petechial spots on the membrana nictitans. In many cases there is a blue colouration of the conjunctiva (cyanosis). If the temperature be now taken, fever is detected. In a few cases shivering fits are remarked at the onset, and the breathing is noticed to be slightly hurried. The shivering may recur in some, though not in all cases, during the course of the disease. In many others in which it was not recorded, I believed it escaped observation. In others again in which it was absent during the early stages, it was sometimes noticed later on. This symptom is, therefore, not of practical value, when we consider the difficulties attending its detection in our animals. The temperature is found to be  $102^{\circ}$  F., if taken at the onset, and rises to  $105^{\circ}$ ,  $106^{\circ}$  F., or even higher. It descends in a few hours to  $102^{\circ}$  F., and may even come down to normal point, *with complete cessation of all febrile symptoms*. The cases linger to several days, and show an apparent improvement, but again manifest acute symptoms, due either to a fresh attack, or, as I think is more likely, to some complication. Usually, the temperature remains at  $102^{\circ}$  F., or a steady tendency to normal temperature is maintained. Still, the animal does not improve, and the majority of them never do completely rally, being destroyed by order, or succumbing to weakness. Occasionally death results earlier in the course of the disease during an exacerbation. Frequently there is no regularity in the rise and fall of temperature, and the fever often assumes a

remittent type. The temperature sometimes falls below normal point. *There is a morning remission noted in most cases.* In some death follows in a few hours, the animal never having shown any signs of previous illness, but especially towards the early part of the outbreak, as shown by the reports of different veterinary surgeons. In other cases, a sustained high temperature is noticed for four or five days, or more, followed by death. Swellings, due to serous effusion into the subcutaneous tissue, sometimes appear in the course of the disease, but especially under the arms, throat, and abdomen, between the thighs, and in connection with the sheath and scrotum—the scrotum is sometimes enormously enlarged. Thirst is present in some cases, attended with diarrhœa. Veterinary Surgeon Ringe saw a case in which persistent vomition was noted. Paraplegia, pronounced Stringhalt, muscular tremors, platting of the legs, etc., develop during the course of the disease, due to effusion on the spine and on individual nerves. These symptoms are seldom permanent in character, and often disappear on removal of the effused fluid due to natural absorption. They may, therefore, be regarded as complications of this disease. Judging from the other symptoms taken in connection, it is not improbable that Paraplegia is but a modification of the paralytic form of Anthrax, well known to veterinarians in India. V.S. (First Class) B. Glover, A.V.D., described to me a case in a stallion belonging to the horse-breeding department, which occurred in this district only the other day, where the animal's tongue hung some inches outside the mouth from swelling (Glossanthrax); *post-mortem* examination revealed the usual lesions of Anthrax, such as have always appeared in my own cases. The rapidity with which the animals lose flesh in this disease is also characteristic of Anthrax, and was well marked in several cases which came under observation, but in none so clearly as in the case of a grasscutter's pony which was found in apparently perfect health and condition at 10.30 a.m. on the 30th December, and had suddenly fallen away by three o'clock of the same afternoon, to the state seen in the accompanying photograph, taken next morning. In a series of more than a hundred temperature charts kept by Messrs. Clayton, Philips, Nuthall, Walker, Ewing, Pease, and others, no relapses have been generally found associated with the fever common to this disease. I have attached a few only, out of many charts kept by myself, and others furnished on request by V.S. Nuthall, which were taken at random from among several cases belonging to the 8th Hussars and 19th Bengal Lancers respectively, and which may prove of interest in this connection.

*Course.*—The course of the disease is not so rapid as in some other forms of Anthrax, the animals revive after an attack, and a



few days after a relapse occurs, which leaves them so weak that they seldom rally, ultimately succumbing to exhaustion. In these terms Röhl has described a form of Anthrax which is noticed on the continent of Europe. (*Lehrbuch der Pathologie und Therapie für Thierärzte*, 1885.) Bollinger also records cases of Intermittent Anthrax in cattle, in which after each attack the animal appeared in perfect health. And Veterinary Surgeon Bowhill's observations on Anthrax in cattle, may be read with interest in this connection, as showing the characters now and then assumed by this disease in America also. (VETERINARY JOURNAL, December, 1886, p. 418.)

The course and symptoms of the disease are not such as we have been accustomed to meet with during outbreaks of Anthrax in India before; but this should not dampen interest in the subject, and search after truth, whether it be found in accordance with our preconceived ideas or otherwise. The similarity of the symptoms and course observed in the last outbreak among horses and ponies, to those found in Remittent Fever of man, in so far as I can judge from its literature, and the fact of their being indistinguishable from that form of Anthrax known on the continent of Europe as Intermittent Anthrax—*which may easily assume a remittent type in hot climates*—is strong evidence in favour of my belief that the diseases we have studied bear a very near relation to each other, if they are not identical.

Mr. Oliphant, Principal Veterinary Surgeon in India, referring to the Meerut outbreak, in his letter, dated 28th December, 1886, says:—"One of the principal reasons for considering it *not* Anthrax, has been, I understand, that it has not been *rapidly* fatal. But, I believe it has followed exactly the same course as Anthrax in all outbreaks, in which careful observations have been made. Numerous other cases of a prolonged type have always followed." For this distinction we can refer to experiments made on animals, as well as to cases of daily observation. Those conclusions that are based on the observations of rapidly fatal cases *only*, are evidently based on the assumption that the tissues of every animal are absolutely identical. That, however, is not the case. There are some animals which will take the disease in a very virulent type, and die rapidly, whilst in other animals the same micro-organisms will prove relatively innocuous, or produce only a very mild attack, characterised by a prolonged course. It is the same with other diseases; each animal has its own idiosyncrasies for nourishing and for starving micro-organisms, since every nutrient soil is not equally adapted to the same microzoon. But not only is the difference of the same tissue in different animals the reason of a different behaviour of the same microzoon, the tissue itself in one and the same animal may change under different conditions.

It is possible that changes may take place in the system of the animal, unknown perhaps to ourselves, but very important to the respective micro-organisms. I will only allude to "vaccination" as a preventive of disease, which evidently changes the nutrient soil, so that the microzoa of that particular disease can no longer find nourishment, and the vaccinated animals remain unaltered by an injection which would have proved rapidly fatal if non-vaccinated. It is further ascertained, as a matter of observation, that certain micro-organisms cannot thrive well, or do so very imperfectly in one body under certain conditions, whereas they may be pernicious when certain other conditions are present. (Emmerich, *Tageblatt d. 59, Versammlung Deutscher Naturforscher und Aerzte*, 18 bis., 24th September, 1886, p. 145.) May not this consideration explain why in one animal the microbes of Anthrax produce an acute attack, whilst in another they do not? It is known that, not only in an animal's body, but cultivated in artificial media, bacteria may retain their properties unaltered, or they may undergo more or less modification.

If it is true that not every nutrient soil is equally well adapted to a certain microzoon, that microzoon developing better in one constitution than in another, it must consequently be true that one microzoon may be so changed that it may occasionally show some difference, according to its surrounding conditions, in its mode of growth and other peculiarities, to such an extent that its pathogenic activity might be lessened or strengthened according to those conditions. This idea is in accordance with what daily experience teaches with respects to plants and animals. Plants put in a convenient soil may grow extremely well, and may, to a certain extent, change their colour, smell, and other qualities; but put in a bad and inconvenient soil, they will not thrive, or but only imperfectly.

The P.V.S. in India observes—"I have always been anxious to discover from the charts, whether there is a 'periodicity' in the temperature of Anthrax. There is no doubt that the bacilli appear in crops, appearing and disappearing at varying intervals, and I believe they hold possession of the system, probably in the shape of spores, for very long periods. We have a horse here which has gone through three attacks of Anthrax, and shows now periodical crops of petechiæ on the mucous lining of the eye-lids, etc." An opinion I can fully endorse from my experience of Anthrax in camels also, which I reported officially during 1885-6.

The difficulty which must at first strike every one in regard to the action of these microzoa on the bodies of animals is the comparative rarity of acute symptoms in so many cases. The explanation which on many grounds has recommended itself, as accounting more satisfactorily for the phenomena observed, is that the in-



jurious effects produced by microbes are due, not only to what they take or what they excrete, but what they leave in different cases, and this is closely associated with the imperious demand they make for oxygen. The *bacilli Anthracis* being ærobic, they must obtain the oxygen they require for the process of life from the tissues by which they are surrounded; and when oxygen is withdrawn from such complex compounds as those which occur in the animal's tissues, after an apparent fictitious improvement, the elements enter into new combinations, and then, under the name of ptomaines are believed to be the really poisonous agents. An animal's body is capable of resisting the action of such foreign agents probably better than that of active and living germs, and so long as the poisonous chemical agents do not occur in excess, only partial or modified harm comes from their action. The Principal Veterinary Surgeon in India, in his D.O. dated, Umballa, 21st December, 1886, observes—"Formerly only such cases as died were considered as Anthrax, whilst numerous other cases occurred at the same time, which went unrecognised. Veterinary Surgeon Mann was one of the first, if not the first, to bring this prominently to notice, and in an outbreak here, in N. B. Royal Horse Artillery, last year, in which the most careful taking of temperature of *all* horses was carried out, only a comparatively *small* percentage of deaths occurred, and these principally in the beginning. In the late outbreaks at Rawulpindee and Multan, the nature of the disease was clearly set at rest by demonstration of the *bacillus Anthracis*, under the microscope."

(*To be continued.*)

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## Editorial.

### VETERINARY EDUCATION.

THE commencement of the winter session of the veterinary schools seems to be a fitting time to direct attention once again to the perennial, and always important, subject of veterinary education. And it is all the more necessary, perhaps, to refer to it now, when very radical changes may be shortly proposed in the manner of testing whether candidates for the diploma of the Royal College of Veterinary Surgeons are really what that document vouches its possessors should be. For it testifies that he whose name is inscribed upon it has been examined by the Board of Examiners of the Royal College, and has been found *fully qualified to practise the art and science of veterinary surgery and medicine*, and that this award constitutes him a member of the profession.

It will be at once seen that, by the terms of the diploma, the newly-graduated veterinary surgeon is certified to be competent to assume and carry out in a skilful and satisfactory manner all the demands which a most exacting public may make upon him as a professional man.

Without discussing whether the testimony of the diploma is not highly exaggerated, and therefore misleading, as to the knowledge and ability of the student who successfully passes the final examination of the Royal College, it may be well to note that in recent years the student has gained advantages in passing the tests of the Examining Board which his predecessors certainly had not. For instance, to obtain the diploma he now has three examinations, while before there was only one; and a student rejected then had to wait a year before he could be re-examined, while now he may appear in three months. True, some subjects have been added—pathology, histology, and morbid anatomy; but the tendency has been to make the course of study and the examinations easier for the student, by extending the former over a longer time, and making the latter more frequent, while dividing them into three sections. It is about to be proposed, we believe, to make the examinations still more easy, by exempting a rejected student from re-examination in those subjects in which he has already chanced to pass.

For instance, in each of the three divisions of examination there are three subjects; a student who comes up to be tested in one of these divisions may fail in one or two of the subjects, and pass in two or one; when he comes up again he is not to be examined on the latter. To this proposal there is the gravest objection. A lazy or stupid student, even the veriest dolt, has a chance of obtaining his diploma by passing in only one subject at each examination; and though the process may be a slow and an expensive one, it will be submitted to, and thus men will be passed into the profession—squeezed through by infinitesimal instalments—who have not the intelligence or application fit for a professional life. Nay, what will probably be proposed for the final examination will be even more damaging. The student who has passed in the oral, but failed in the practical, portion will not be



examined again in the former ; and to acquire the latter he may further spend his time at the college, or go to a practitioner. This proposal will emanate in all likelihood from the quarter which strenuously opposed, and got three outside corporations to oppose, the clause in a recent charter applied for by the Royal College, to the effect that a student before undergoing his *final* examination shall serve a pupilage of twelve months with a qualified veterinary surgeon—a quarter which has over and over again asserted publicly that practitioners could not teach practice, that they could not be entrusted with the care of young men, and that the knowledge these obtained as pupils was worse than useless. Now, when it has discovered that students who go up for their final examination are woefully ignorant of practical knowledge—so ignorant, in fact, that one teacher asserts they should not be expected to have any, but should endeavour to acquire it after they have left the schools, and when possessing a diploma certifying they are fully qualified to practice—and that one half are relegated to further study, the much-abused practitioners are to come to the rescue of the schools.

The real fact is, the schools cannot impart the necessary amount of practical knowledge which the holder of a diploma should possess ; they have not the conveniences or opportunities. Even in the medical profession, notwithstanding the immense facilities and advantages the hospitals offer for practical instruction, grave complaints are made as to the lack of such knowledge on the part of young doctors, and many of the leaders in medicine are urging a return to pupilage, in order to render junior medical men more useful and trustworthy when they leave their schools. One of the most glaring defects in our system of veterinary education in this country, is the absence of even the most elementary practical training—a defect which the expunged clause referred to would have gone far to make good. But it must be remembered that the schools have contracted with the students to teach them their profession for the fees they exact, and they have no right to send them wandering abroad in search of instruction. Upon the practical and scientific skill of the veterinary profession hinges its existence ; and certainly the first, the most difficult to acquire, is that which is least cared or provided for in the instruction of students. It is the lack of practical knowledge which brings the younger members of the profession into disgrace, though the fault is not theirs.

With regard to the examinations, then, our opinion is that they are already too easily got through ; and to make them easier by deciding that once a student has passed in a given subject he is not again to be examined upon it, is an acknowledgment that he was only crammed in it for the occasion, and has forgotten all about it. The profession and the public ask for a gallon, but some of the teachers say they must be satisfied with a quart, or take their gallon by instalments, and possibly in very short measure ; or they would try to cram the gallon into a quart pot. The profession is already full to overflowing, and the struggle for existence among its members is becoming serious ; all the more reason, therefore, for keeping dolts and dullards—such as the new proposals would admit—out of it. We have too much in quantity, we require

more in quality, and if the profession is alive to its interests it will insist upon this.

Changes in the Examining Board (with the view, we suspect, of rendering the examinations easier and the number of passes greater) are also contemplated. One of these is reversion to the old and most objectionable system of having what are called "specialists" as examiners—that is, men belonging to other professions who know nothing of ours or its requirements, and who care as little. Surely the profession will not have the conscience to confess that it cannot examine its own students, and that it is no more advanced now than it was ninety years ago ! There is much talk about spreading the honours pertaining to the Royal College among its members, and this will be commenced by employing aliens as examiners. If there is any honour in being an examiner—which recent events leads us very much to doubt—then that honour should most certainly be retained among ourselves.

The Fellowship degree was instituted with the view of encouraging members to become examiners, and this is one of the inducements held out to them to study and pay fees ; if medical men and other outsiders are to step in and filch this privilege from them, then assuredly it will be a breach of the understanding, and a disgrace to boot. There are men in the ranks of the profession quite as competent to examine as to teach in every branch of veterinary knowledge ; and though they may, for the sake of their calling, be less inclined to pass incompetent men than the so-called "specialists," they are certainly the men who should be the examiners of veterinary students, as upon them we can place reliance, and upon them we have influence and powers of direction. Not so with the aliens.

The Royal College exists solely for the promotion of veterinary education and veterinary science. On behalf of the public it assumes very serious and onerous responsibilities, and upon the manner in which it discharges its duties will its prosperity depend. Hitherto it has faithfully carried on its functions ; but in order that it may continue to do so, there must not be instituted a process of lowering the manner and standard of examinations to the capacity of the dullest or idlest students, but rather a raising of them in thoroughness and severity, so as to admit none to membership but those whose training and intelligence truly deserve the testimony of the diploma as at present bestowed.

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#### CATTLE PLAGUE IN THE PIG.

ALL writers on Cattle Plague are unanimous in stating that ruminants alone are susceptible. Mr. Penning, Veterinary Surgeon to the Government of the Netherlands, East Indies, has clearly demonstrated the susceptibility of the wild hog of Sumatra to Cattle Plague. Having remarked with his colleague, Klein, that the numbers of wild pigs decreased after every outbreak of Cattle Plague in the island, he resolved to prove by experiment if they did not die from the same affection as the cattle did.

Having caught a wild pig, he kept it for fifteen days to be certain that it was healthy, when he placed it with the body of a calf that had died of Cattle



Plague. The pig ate some of the carcase, and five days afterwards was noticed to be ill; the sixth day remaining constantly lying down, refusing food, with a discharge from the nose and eyes; the seventh day the pig was unable to get up, the secretion from the eyes was very abundant, and the conjunctiva deeply injected; the eighth day there was an abundant diarrhœa, the injection of the conjunctiva increased, the lachrymal secretion was purulent, and there was difficulty in breathing; on the ninth day the animal died. *Post-mortem* examination showed the mucous membrane, from the mouth to the anus, more or less congested and covered with petechiæ. The respiratory mucous membrane showed the same lesions, clearly proving that the pig died from Cattle Plague. In conclusion, Mr. Penning remarks, this proves that, in the Island of Sumatra, at all events, pigs are attacked with Cattle Plague, and that it is no longer to be looked upon as exclusively confined to ruminants.

### SWINE FEVER.

IN view of the diversity of scientific opinion as to the nature of Swine Plague or Fever, and whether two distinct diseases are not really included in this designation, the German Government has sent Dr. Schütz, the professor of pathology at the Berlin Veterinary School, a favourite student of Professor Virchow, and one of the foremost pathologists in Germany, to study the malady in this country, and to ascertain if the disorder known as the "Schweineseuche" is the same as our Swine Plague.

We believe that, so far as his investigations have gone, he is of opinion that they and the Hog Cholera of the United States of America are one and the same disease, which is special to the pig, but that another malady of an anthracoid nature, the "Rothlauf" of the Germans, "Rouget" of the French, "Red Soldier" of the English, is often confounded with it. This is the disease which, though termed "Swine Fever" in this country, is characterised by skin eruption.

We shall look forward with interest to the professor's report, as it will probably add to the information which he has already given us with regard to this porcine scourge. Schütz' name will be familiar to our readers as the discoverer, with Löffler, of the Glander bacillus.

### THE GLANDER BACILLUS.

IN the *Centralblatt für Bacteriologie* (vol. ii., No. 10), Dr. Krauzfeld gives the results of his recent investigations upon Glanders at the Odessa Bacteriological Institute. He first availed himself of material afforded by nodules removed from a case of acute human Glanders ten hours after death. Cover-glass preparations of these nodules contained a large number of bacilli. Small portions from the centre of the nodule were introduced into the peritoneal cavity of two guinea-pigs. One of these animals presented marked infiltration at the seat of inoculation on the fourth day, and swelling of the left testis on the seventh day; it died on the fourteenth day. A greyish ulcer with infiltrated margins occupied the seat of inoculation; the left testis was replaced by a caseous abscess, and the spleen contained numerous yellowish-grey nodules. The pus from these parts and the nodules of the spleen contained numerous bacilli, the ulcer yielding also various micrococci. Cultures on serum, agar-agar peptone, potato, and agar-agar peptone with glycerine, were made. The growth of the bacilli on blood-serum and potatoes corresponded to the description given by Löffler. The glycerine agar-agar cultures were the best, whitish streaks appearing at the point of inoculation on the second day, reaching seven or eight millimetres in width by the sixth to the eighth day. The bacilli had the characteristic shape, with rounded ends, as described

by Löffler. In the older cultures, some thicker, less regular rods, which stained badly, were thought to be involution forms of the bacilli. No spores were found; thus confirming Löffler's surmise that the bodies described by Weichselbaum as spores are due to the death of the bacillus. In a series of inoculations in guinea-pigs, carried through several generations, the characteristic disease of the testis, nodules in the spleen, and in some cases disease of the nose, were present. No other internal organ besides the spleen was found to be affected.

A case is given in which a diagnosis of Glanders was made by bacteriology. Some nasal secretion from a horse supposed to be glandered, but with no clinical facts in support, was sent to the Institute for examination. Guinea-pigs were inoculated with the material, and died in due course with the above lesions. Examination of the pus and the splenic nodules showed the characteristic bacilli, which were also obtained by cultures. A *post-mortem* examination of the horse confirmed the diagnosis thus arrived at; it proved to be a well-marked case of pulmonary and nasal Glanders.

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### THE HORSE.

A HISTORICAL SKETCH BY DR. E. W. SEYTTER. REVISED BY DR. A. GRESSWELL, M.B., OXON. (COPYRIGHT).

As far back as history, legend, or myth lead us into the dusky epochs of primeval existence, we find the horse mentioned.

Eighteen centuries before Christ it was known to the Babylonians as an animal whose domestication was already then lost in the mist of ages, as a stone tablet, found by G. Smith among the ruins of the Assyrian city of Kounyoundjik, tells us.

On another similar tablet of not much more recent date, written in the reign of a certain king Assur-bani-pal, there is a fable of *the horse and the ox* entering into terms of friendship. The horse is always called the "*glorious in war*."

The writer of the Book of Job has bequeathed to us one of the finest characteristics of the warhorse, couched in the glowing language of eastern metaphor. "Hast thou given the horse strength? Hast thou clothed his neck with thunder? Canst thou make him afraid as a grasshopper? The glory of his nostrils is terrible!" etc., etc.

In the Rîgvêda, *i.e.*, one of the sacred books of the Hindoos, the horse is mentioned as being in the service of man, and in the "Iliad" of Homer it is repeatedly alluded to.

Before we proceed further in describing the position of the horse in the life and history of mankind, it will not be uninteresting to submit some of its different names to a closer examination.

The English word *horse* is derived from the form *hors*, used by the old Anglo-Saxons before the Norman Conquest, which is the same as the Icelandic *hors* or *hross*. This word *hors*, *hross*, or *horse* is found, with very slight modifications, in most of the Teutonic languages. Thus we find *ros* in Dutch, and *ross* in German.

All these similar words come from an old syllable *hor* or *har*, with the meaning of *running* or *moving swiftly*.

There was another word in the language of the Anglo-Saxons, *i.e.*, *horsc*, which means *swift*, *quick*. From this word is derived our English *rash* and the German *rasch*, both expressing the idea of being *swift of action* or *thought*.

We therefore see that to the Teutonic race the horse was the animal whose principal characteristic was its fleetness.



The same idea occurs in various other languages both of Europe and Asia. The Greeks called the horse *hippos* (*hikfos*), and the Latins, with a different pronunciation, said *equus* (*eqvus*). Among the old Persians the name of the horse was *açpa* and *asp*, and in the Gaelic language it was called *epos*. The Armenians still say *asb* for horse, and the old Lithuanians, a people that lived once along the shores of the Baltic Sea, used *aszwa*, which is only a different form of the word *aihvus*, which was used by the ancient Goths. In the ancient language of India, such as is found in the sacred books of the Hindoos, *açva* means equally a horse, *âçus* swift, and *açan* a dart or the swiftly flying weapon.

*Aquila*, which means an eagle in Latin, is the *swift flyer*, and *aqua* stands for the quickly running waves of the water and for water itself. With slight changes we find the same word also in the Keltic language as *achi*.

The connection between the two words *aqua* and *equus* is, as will be shown presently, of great importance for the horse as a mythological figure.

The question arises now, What do all these different names tell us? This question we will endeavour to answer in the following lines.

Any one examining the written records of all the nations of the ancient civilisation in the old world in a direction from west to east, finds that the more he advances eastward the more the date of the first appearance of the horse as a domestic animal is gliding back into the dusky times of the past, until it finally vanishes altogether from out of the memory of mankind into the uncertain regions of myth.

Another observation, going parallel with the above, is the fact that all the names of the horse, bequeathed to us by the ancient races of mankind, belong to the same stock of languages. No vestiges of an ancient name for the horse can be traced either in the great empires of the Nile, Egypt, and Meroë, or in the records of the Israelites, the Phœnicians, the Syrians, and the Arabs.

But it is not only going from west to east that the date of the domestication of the horse is removed back in time; the same phenomenon occurs when we traverse India in a direction from south to north, or again China and Mandshuria from east to west.

We obtain thus three different lines or radii beginning respectively in Western Europe—let us say on the west coast of Ireland, in the south of India, and on the east coast of Asia, and all running into one central point in the great steppe of Shamo or Gobi, in inner Asia. There must have been the first home of the domesticated horse, and from thence it has spread in concentric circles, and at different epochs, over the whole earth.

On the boundless and dreary steppes of Central Asia there still lives a wild horse call the *Tarpan*, which is according to all indications the ancestor of our domestic horse. Darting with flying mane and flashing eye across the wide space of the steppe, the tarpan is to the savage nomad inhabiting those countries an image of all that is free, unfettered, and swift, fierce, agile, and independent. Therefore he has called it the *swift one*, and his descendants in civilized Europe call it still so, though it be tied to the cart, and the plough, and its lofty and savage spirit be broken by slavery.

The swiftness of the horse of the steppe is the more remarkable if compared with the grotesque and heavy-looking, wearily moving camel of Bactriana, with the peaceful and slow ox, or the timid and shy sheep. Even the dog, that faithful and intelligent friend of man, is but a poor creature in these countries when compared with the horse.

There are tribes, roving over the wild plains of Asia, whose entire life is dependent on the horse, and that would meet with certain extinction were that animal ever to be withdrawn from them by nature.

The child of the Tartar is tied on its father's horse and taught to ride before its legs are strong enough to enable him to walk. When grown up he

eats, and even often sleeps on horseback. Herodianus, an old writer, says, of one of those tribes of wild horsemen, the Parthians:—"They use their bows and horses not only for the purposes of war like the Romans, but grow up with them from their earliest childhood; they never put their quivers aside, neither do they dismount their horses, but always use them either against their enemies or the wild beasts."

In the valleys and deserts of the rivers Oxus and Jaxartes is found the Turkmenian horse, highly esteemed for its strength, endurance, and intelligence. With a small amount of food the Turkmene rides scores of miles over the waterless plains without resting once, surprises, robs, and disappears ere the victim knows almost what has happened to him. For those qualities and services, the rider loves his horse more than his wife and children, and cares for its welfare in the most touching manner. To the Kirghiz the horse is the quintessence of strength and beauty. "He loves his horse more than his sweetheart," says a modern traveller, "and fine horses seduce even the most honest and honoured man to stealing."

The best horses of antiquity were those of Media and Persia, and the Medes and Persians were known throughout the whole of the ancient world as skilful horsemen.

Herodotus speaks of the celebrated Nisæan horses:—"In Media there is a wide plain, whose name is *Nisaion*. This plain produces the great horses called after it;" and another Greek writer, the geographer Strabo, calls the Nisæan horses the best and greatest horses used by the kings of Persia. Armenia was another country celebrated for its excellent breed of horses, as we learn from the same author. "Armenia is so blessed with horses that it equals Media in this respect . . . . The Satrap of Armenia sends the king of Persia every year 20,000 young horses for the festival of Mithras."

Mithras being the sun-god of the ancient Persians, this leads us to the horse as sacred to solar deities among various nations.

The sun, moving quickly across the cloudless skies of the steppes of Central Asia, the Persians, Medes, Massagetes, Alanes, and numerous other tribes consecrated the horse to their sun-gods. This we learn already from the "father of history":—

"They (the Massagetes) worship the sun as their god, and sacrifice horses to him. The meaning of this is that to the swiftest of all gods they sacrifice the swiftest of all earthly creatures."

Homer calls the sun by the epithet, "*never-tired*."

In the Rîgvêda of the Hindoos, we read the following lines about the horses of the sun-god:—

"See Surja's blessed yellow coursers,  
The praiseworthy and glittering in colours,  
Rise worshipping on heaven's sphere,  
Round heav'n and earth they turn within a day.

"This is the godhead of Surja, his greatness:  
When all in action, he doth loose the team,  
And when he from the chariot takes the yellow horses,  
Still night is covering everything with darkness.

"And then, before the eyes of Mithras and Varunas,  
Surja assumes his form in heavenly regions,  
In endless train his red and dusky glory  
Is led thus by his yellow coursers."

The same idea of the sun-god riding on his chariot was prevalent among the Greeks.

Castor and Pollux, the two gods of light, are represented as riding on white horses, or standing on chariots drawn by them. Thus they appeared in the battle on the River Sagra, in which the Locri were, by their help, victorious



over the men of Crotona. White horses were said, in the metaphorical language of antiquity, to have been wedded to the fair and beautiful daughters of Leukippos, whose name reveals the element of light. *Eos*, the rising sun, appears in the eastern skies on white horses chasing the sombre night before his radiant appearance, and the Lacedæmonians sacrificed white horses to Helios on Mount Taygetus. This god was represented as being drawn by white horses, beaming in silvery radiance.

A white horse was sacred to *Svatovit*, the Slavonian god of light, and *Triglav*, the demon of night and wickedness, *Svatovit's* antagonist, rides on a black steed.

Of the ancient Saxons we know that they consecrated their white horses to the sun, a custom which has the same origin as the sun-worship of ancient Persia, where Darius obtained the royal crown because his horse neighed first to the rising sun.

The kings and heroes of the ancient world being regarded as the earthly representatives of the heavenly powers, they very often assumed the divine symbols as their own emblems.

The citizens of Agrigentum, in Sicily, went out of their city with three hundred chariots, drawn by white horses, to meet the victorious hero Exænetus; and the dictator Camillus, after having captured the proud city of Veji, entered Rome on a chariot drawn by white horses.

Not only the golden sun, but also the rapid storm was represented by the horse, as was also the swiftly flowing water.

The horses of Boreas, the god of storms, form an important feature in Greek mythology. In the "Iliad" of Homer we read how the twelve foals of Boreas:

" . . . . o'er the teeming cornfields as they flew,  
Skimmed o'er the standing ears, nor broke the haulm;  
And o'er wide Ocean's bosom as they flew,  
Skimmed o'er the topmost spray of the hoary sea," etc.

When the Greeks wished to give a good description of a fine horse, they likened it to the storm or the breeze. Thus "the horses of Rhesus were in their swiftness like the winds,"—those of Achilles were called the sons of Zephyr, and the Harpy *Podarge*, whose own name means "*the swift-footed*," possessed horses that flew with the gust of the wind, of which Xanthus, one of them, boasts:—

" Our speed of foot may vie with Zephyr's breeze,  
Deemed swiftest of the winds. . . . ."

Æolus, the ruler of the winds, is himself a son of *Hippotes*, i.e., the horse-man.

In the magic and mysterious twilight of Scandinavian mythology, the horse is the servant of various gods.

*Odin*, the god of the fleeting, ever-moving, either stormy or serene element of the air and the sky; *Wuodan*, the mighty lord of the wild chase of the German folklore, who at the head of a spectral host rushes on his horse through the green leaves and over the still moonlit clearances of the forest solitude—*Wuodan*, whose name we still possess in our Wednesday, i.e., Wuodansday, possesses a giant horse with eight feet, grey of colour like the mist and the fog, and the stormy air of midnight, *Sleipnir* by name.

*Winter*, the giant, promises the gods of *Völþusheim*, i.e., the Scandinavian Olympus, to build them a beautiful palace, in which undertaking he is helped by his horse, *Svadilfari*, or the *Northwind*. Before the palace is completed, however, *Loki*, the cunning and crafty, assumes the form of a *steed* (Southwind), and thus draws *Svadilfari's* attention from the palace, which thus remains unfinished when gay spring enters the land. *Thor*, the terrible thunderer, dashes the head of the giant to pieces with his magic hammer.

As a symbol of water, we find the horse in the beliefs of various nations.

The ancient Persians killed horses in honour of the rivers; thus when Xerxes came to the river *Strymon*, the Magi sacrificed white horses to the genius of that river.

In the reign of the Emperor Tiberius, the Parthian Tiridates propitiated the river-god of the Euphrates by the sacrifice of a horse.

The same rite prevailed among the old Trojans, who threw live horses into the waters of the river Skamandros, if we are to believe the hero Achilles, who tells us how:

“ . . . living horses in his waters sink.”

On the Argivian coast, in Greece, there once used to spring forth a well of fresh water amid the salty waves of the sea. Into this spring, which was called *Dinc*, the Argivians used to precipitate caparisoned horses as a sacrifice to Poseidon, the god of the sea.

In the Island of Rhodes they threw even whole chariots with their teams, all beautifully adorned and harnessed, and consecrated to Poseidon, into the sea.

The waves of the ocean, sweeping gently over a sandy shore, or dashing fiercely against steep and wild rocks, were from oldest times compared with horses, and he who will watch the continuous, never-tiring game of the revolving waves with their crests of foam, like white silvery manes, and curved like the neck of a spirited horse, now sinking, now rising, will surely support us when we say that no better metaphor could possibly be found than that of the *horses of Poseidon*.

Whenever we meet with the horse among the ancient nations, it is always in the capacity of a warlike animal that it presents itself to us. The use of the horse in the peaceful pursuits of everyday life was unknown to the primitive civilisation. It either drew the war-chariot or bore the saddle (although the art of riding is of much more recent date than that of driving), but it was never found before the plough or the cart.

For the tilling of the ground and the ordinary traffic the ox was used.

“First of all a house, and a wife, and a ploughing ox.”

These three are, according to Hesiodus, required for a rustic home, but he does not add the horse. He who had no oxen or cart had to go and borrow them of his neighbour, but,

“Easily sayest thou; Lend me two oxen, friend, and the chariot.  
But easy, too, the refusal; The oxen are out at the work.”

The life of the ox as the support of man's existence was sacred, like the life of his master. Pythagoras said,—“*Lay not thy hand to the ploughing beast.*”

In the fable of *Cleobis and Biton*, which Solon tells king Croesus, it is said that the priestess of Hera drove on an oxen-cart to her temple. The old Merovingian kings went to the assembly of the people on carts drawn by oxen, and in the Salic Law the killing of the *taurus regis*, or ox of the king, was punished by a much higher fine than that of the king's finest horse (*varrannio regis*).

No such pretexts and laws existed in favour of the horse, which, as an animal sacred to the war-god, and to solar deities, was either slaughtered on the altars of the temples or fell in battle.

Riding was an unknown art among the ancients. On the ruins of the royal cities of Babylonia, Assyria, and Media, the horse is always represented as drawing the chariot, but never as carrying a rider.

In the “*Iliad*” we read that:—



“ In the front rank, with chariot and with horse,  
He [Nestor] placed the car-borne warriors ; in the rear,  
Numerous and brave, a cloud of infantry,  
Compactly massed, to stem the tide of war.”

Only in a more recent period we meet with the horse bearing the saddle, as, for instance, in early Rome, whose cavalry was famous, and whose knights, the *equites*, derived their name from the horse (*equus*). Thus Aulus, the Roman dictator,

“ Spake to Caius Cossus,  
The captain of his guard ;  
\* \* \*  
Now hearken, Caius Cossus :  
Spring on thy horse’s back ;  
Ride as the wolves of Apennine  
Were all upon thy track.”

As time wore on, however, and the dim glimmer of the heroic ages waned away before the broad and sunny light of civilisation and humanity, when war and hunting ceased to be the only pursuits of mankind, and agriculture and industry took their stead, the horse was used more and more for domestic purposes. Like the ox it began now to draw the plough through the furrow or the peaceful cart to the market of the primitive city. As a servant of war it remained only in the feudal institutions of the Middle Ages, and the orders of chivalry would certainly never have arisen without the steed of the warrior. At the present day its use in war is far eclipsed by its importance in the works of peace.

To us, inhabitants of Europe, and citizens of the nineteenth century, the horse only yields its intelligence and bodily strength ; but among various tribes of Central Asia, the Tartars, the Calmucks, the Mongols, also the Turks and Huns in times of old, the milk and the flesh of the horse were and are still the main support of their existence.

*Cumiss*, i.e., fermented horse’s milk, is deemed to be the finest drink among the wild horsemen of the great Shamo in the heart of Asia. By such savage tribes of Turanian origin the custom of drinking the milk of horses was introduced among the old Slavonian populations—the Russians, the ancient Prussians, and the old inhabitants of the Baltic provinces of Russia. An old writer says of the ancient Prussians, “ They possess so much honey that the king and the rich people leave the mead to the poor and the serfs, and drink the milk of steeds.”

Here, as among the ancient Medes and Persians, the steeds were kept in herds like cows, and were regularly milked. The Goths in Sweden, and the Sembes—a people inhabiting the country of Samland, intoxicated themselves with the fermented milk of horses.

Eating horse-flesh was a chief characteristic of the old invaders of Northern and Central Europe, and the dismal, yellow hordes of the Huns, which invaded and laid waste the countries on the Danube and the whole of the German Empire at the beginning of the Middle Ages, used to put a piece of raw horse-flesh under their saddles and ride on it until it was soft enough to be devoured.

Horse-flesh cooked was in ancient times a favourite dish in Germany, and even the pious inhabitants of convents and cloisters enjoyed a joint of horse, and very thankful they were for it, as may be inferred from the Latin blessing in use at about 1000 A.D. among the monks of the rich convent of St. Gall in Switzerland :—“ Sit feralis equi caro dulcis in hac cruce Christi.”

Pope Gregory III. wrote in the year 732 to Winfried Bonifacius—a Briton, and the great missionary and martyr of the north, called the apostle of the Germans—“ Thou hast permitted to some the eating of the flesh of wild

horses, and to most that of tame horses ; henceforth, most holy brother, do not permit it any more."

It seems that the great British missionary had been lenient in this point. Most probably to him, who had known the use of the flesh of the horse in his youth, the practice was a natural one, and he did not look on it with horror like the Pope, who was a child of the south, where people were always more particular and discriminate in matters of animal food than in the north.

Before we close this sketch by a brief history of the horse in England, we intend to take into consideration the two nations of ancient Egypt and of the Israelites in their relations to that animal.

In the so-called ancient empire of Egypt, that is, from the beginnings of history to about 2000 B.C., no mention whatever is made of the horse, either in the written records or on the pictorial representations.

Only after the time when the great invasion of the Hyksos or Shepherd tribes in Egypt was past (about 1700 B.C.) we find the horse mentioned in the picture-writings of that wondrous country. Probably it was introduced in Egypt by the Hyksos. At any rate, it came there from the east, and soon after its introduction became one of the most conspicuous features of the country.

From Egypt it penetrated into Palestine, where it had been unknown before.

Scarcely any mention is made of the horse in the olden times of Israel, and where it occurs it is only as the warlike animal that forms the proud and insolent boast of the mighty and rich nations surrounding the humble and righteous people of the Lord. The patriarchs never used it for their own mostly peaceful purposes, nor does it seem to have taken any part in the wanderings and struggles of the Twelve Tribes before and during their establishment in Palestine.

The ass and the mule were the only animals in use for riding and driving.

The Decalogue says : "Thou shalt not covet thy neighbour's wife, nor his ox, nor his ass," etc., and never mentions the horse—a clear proof that it was not an inhabitant of Canaan at the time of the Israelitic conquest.

In the former days of Israel and Judah, the horse was even an abomination, as being the animal sacred to "strange gods" : "And Josias took away the horses that the kings of Judah had given to the sun at the entering in of the house of the Lord . . . . and burnt the chariots of the sun with fire" (2 Kings xxiii. 11).

These horses and chariots were evidently the emblems of some eastern solar deity, perhaps Median or Assyrian.

The armies of the heathens possessed horses and chariots :—"And they [the Canaanites] went out, they and all their hosts with them. . . . with horses and chariots very many" (Josh. xi. 4). "Then were the horsehoofs broken by the means of the pransings" (Judg. v. 22).

As the proud, lofty, and defiant animal of the mighty powers it is mentioned in the Book of Job.

These prejudices against the animal disappeared in the course of time, and in the reign of King Solomon the kingdom of Israel was so reconciled with the horse that a lively traffic was carried on with Egypt.

The Arab horse, now so high in praise, is also a comparatively recent importation from the East.

The Arabs of the primitive times did not know the use of the horse, in whose strength and swiftness consisted the might of their enemies ; they used the dromedary instead.

"In *Arabia Felix*" (now the province of Yemen in Arabia), says the geographer Strabo, "there are neither horses nor mules to be found ; their places are taken by camels."



The Arab warriors in the army of Xerxes, and at a later period in that of Antiochus the Great, rode exclusively on dromedaries.

Now the Arab horse is one of the finest animals of creation, and the most precious jewel in the possessions of an Arab, who, like the Tartar and the Khirghiz, loves it more than his family and himself. An anecdote may serve to illustrate the Arab's love for his horse:—

“The whole stock of an Arab of the desert consisted of a mare. The French consul offered to purchase her, in order to send her to his sovereign, Louis XIV. The Arab would have rejected the proposal, but he was miserably poor; he had scarcely a rag to cover him, and his wife and children were starving. The sum offered was great; it would provide him and his family with food for life. At length, and reluctantly, he yielded. He brought the mare to the dwelling of the consul, dismounted, and stood leaning upon her. He looked now at the gold and then at his favourite. What he said and to what conclusion he came may be quoted with the poem:—

“ ‘ My beautiful ! my beautiful !  
That standest meekly by,  
With thy proudly arched and glossy neck,  
And wild and fiery eye.  
Who said that I had given thee up ?  
Who said that I had sold ?  
'Tis false ! 'tis false, my Arab steed !  
I'll fling them back their gold.’ ”

With the last words he sprang upon her back, and was presently out of sight.”

To this proud animal of the sandy desert the splendid Spanish horse owes his excellence, and both the Spanish and the Arab horse have endowed the English racer and hunter with their fine qualities. The thoroughbreds of England are, without exception, descended from one or the other of the above horses.

The first writer who mentions British horses was Cæsar, who praises them as “powerful, and well-suited for purposes of war by their stature and training.” Figures of horses frequently occur on ancient British coins—a fact well worthy of attention, as it bears proof to the importance of the horse in those times.

After the invasion of Britain by the Angles, Jutes, and Saxons, the rearing and training of horses rose into sudden eminence, and the horses of that period belonged to the best in Europe.

The saddle was in use as early as the first part of the seventh century. The old ballad of the Battle of Maldon says of Goderic that “he fled from the field on the horse which his master had ridden in battle.”

German and Spanish horses were introduced in Britain under the reign of Athelstan, and improved the breed greatly.

William the Conqueror owed his victory at Hastings chiefly to the superiority of his Norman cavalry, and after his ascension to the English throne he paid every attention to the rearing of horses. It was in his reign that the Earl of Shrewsbury, Roger de Belesme, imported some fine Spanish horses to improve the studs on his estates in Wales. He succeeded so well in his endeavours that the horses from that part of Wales were for a long time afterwards celebrated for their swiftness.

The English draught-horse was improved by a hundred Flemish stallions, introduced by King John.

Spanish and Arab mares and stallions were brought into England under Edward III.

In the time previous to the Restoration, the prize for the winner in the great races consisted of a silver bell. This bell was converted by Charles II.

into the cup that now forms the highest ambition of the owner and the rider of the race-horse.

Constant care and steady improvement have raised the English race-horse to such a high level that it not only vies, but actually beats the splendid Arab courser, both in speed and endurance, and thus forms a manifest proof of what the intelligence of man is able to perform, as respects the rest of the animated creation.

The Tarpan and the savage horseman of the steppes of Central Asia, and the beautiful, proud, and aristocratic animal, together with man as representative of Western civilisation and refinement—these are the two poles, between which the great fact of the civilisation of Europe and Asia has been accomplished.

It was the horse that bore the countless hosts of Aryan settlers from the heart of Asia right across two continents to the Ultima Thule of the ancient world; without it, the great immigration would never have risen as a fact into history.

It was the horse that formed one of the principal bases of the whole of the mediæval state and society. Feudalism without chivalry was a thing impossible, and a knight without a horse is inconceivable.

Wherever we look we meet with the horse—in war and in peace, before the plough of the settler or under the saddle of the nomad. Considering and summing up all the facts and details, we might well ask ourselves, Would Europe ever have received the precious gift of an early civilisation without that most faithful of all animals?

#### SOME FIRST PRINCIPLES OF SCIENCE.\*

MR. PRESIDENT, LADIES AND GENTLEMEN,—When you kindly invited me to deliver a lecture this evening before the members of your learned society, I felt myself much honoured by your courtesy and consideration. My only difficulty was in the selection of a subject which would at once be likely to prove of the most interest and, at the same time, of the greatest usefulness, for I may say that I most fully sympathise with the praiseworthy objects at which you aim. Hence I determined to select a wide range of scientific review for our mutual consideration.

It is true of most scientific knowledge—it certainly is, in the highest sense, of medicine and the science of disease—that the facts recorded in books are not up to the level, or anything like up to the level, of the knowledge possessed by the foremost workers. It concerns us not to-night to say why this is so; but it does follow, as a corollary from this truth, that the function of the lecturer is, if possible and where possible, to bring forward facts which one cannot readily find recorded—new truths which have not received the attention they deserve. In recent times Bacon's prophecies regarding the advance of science have indeed been fulfilled far beyond what even he could have imagined; and every day our knowledge grows. Every day the physician who makes it his aim to keep abreast of the wonderfully important and most valuable work which is now being done in England, on the Continent of Europe, in America—in short, all over the earth where civilised people dwell—is acquiring new powers hitherto undreamt of in dealing with the ills to which human flesh is heir.

Ladies and gentlemen, it is Thought which has always ruled and ever must

\* A lecture delivered by Dr. Albert Gresswell, B.M., B.A., M.R.C.S., Christ Church, Oxford, in accordance with the invitation of the Louth Naturalists' Society, before that society, on Thursday evening, May 5th.



rule the world in which we live. It is this which determines all our activities, tells us what to investigate, how to investigate, how to apply the results of investigation. Yet Thought, though it has always had a deep soul of Truth, has yet not been ever quite accurate, and this we see in the accounts of the supposed origin of the earth which different nations have believed. According to the Babylonian belief, there was a time when all was water and darkness. Then from these came hideous creatures, winged men, men with the legs and horns of goats, bulls with human heads, and other like monsters. Above all these was a woman, goddess of nature and mother of all beings; and Belus, the chief of the gods, cut her in two, making of one half the earth and of the other half the sky. This caused the monsters to die, for they could not bear the light, upon seeing which, Belus cut off his own head, and the gods then mixed the blood that flowed therefrom with the dust of the earth and formed man; and this accounted (so thought the Babylonians) for man's divine nature. Belus afterwards made the sun, moon, stars, and five planets.

In the ancient religion of the Egyptians there is a legend that the Sun wounded himself, and that from the stream of his blood he created all beings. According to the Hindu legend, the universe was in darkness when Brahma, himself unseen, dispelled the gloom, producing the waters and causing them to move.

These and many allied beliefs, indicating as they do an ever-yearning search for an explanation of the facts of the universe in the minds of primitive races, are of intense and ever-living interest. The love of truth, implanted by the Almighty in the mind of man, ever spurred on, even in the oldest times, to answer those great questions, "Why are we here? What is the nature of that great mystery which our presence here and the existence of the universe around us present to our inquiring minds?" It will be manifest to those who have studied the early beliefs of mankind that there are great and striking resemblances between them.

The story is well known, writes Edward Clodd, how, in the 1307th year after Christ, the cruel Gessler set a hat upon a pole as a symbol of the ruling power, and ordered every one who passed by to bow before it. A mountaineer named William Tell refused to obey his behest, and was at once brought before Gessler. Tell was known to be an expert archer, and he was consequently sentenced to shoot an apple from off the head of his own son. The apple was placed on the boy's head, the father bent his bow, and the arrow flew through the air and pierced the apple through and through. Gessler had seen that Tell before shooting had stuck another arrow in his belt, and now, after his successful shot, he asked him why he had done so. The reply is well known: "To shoot you, tyrant, had I slain my child."

Now the cross-bow which Tell is said to have used is shown at Zurich; but still the event never took place. One poor man was burnt alive for daring to question the truth of the story; but he was right. The tale is familiar to the mythologist. It is told not only in Iceland, Denmark, Norway, Finland, Russia, Persia, and perhaps India, but it is also common to the Turks and Mongolians, while a legend of the wild Samoyedes, who never heard of Tell, or saw a book in their lives, relates it chapter and verse of one of their marksmen. In its English form it occurs in the ballad of Cloudelee. Even Sir Walter Scott, in the thirteenth chapter of his beautiful novel "*Ivanhoe*," seems to have had some such story in his head when describing the contest between Locksley and Hubert.

In point of fact, the story of William Tell is an old Aryan sun-myth, and Tell is the sun-god, whose rays of light, like arrows, never miss their mark, and likewise never fail to kill their foes.

It is wonderful how these and the like tales have held their own through

countless ages. Scientific education is daily becoming more appreciated, more honoured, more revered ; and, as it speeds, truth will raise itself above superstition of all kinds. The doctrine of the correlation of force is one which has only recently developed itself. Motion, says Herbert Spencer, whenever we can trace its genesis, we find has pre-existed as some other mode of force. It has been established by scientists that all the various forces—light, heat, magnetism, electricity, sound—are all forms or modes of one unknown force that cannot be destroyed, are all capable of being produced by, or of producing one another. I rub a piece of sealing-wax, it becomes electrified, and will attract bodies possessing the opposite kind of electricity. The electricity was produced by my rubbing the sealing-wax, *i.e.*, by motion. Whence came that motion? From the contraction of the muscles of the arm and hand, and this power of contracting was gained by the decomposition and dissociation of the elements of which those muscles were composed—in other words, by chemical change. Every time we climb a mountain, or indulge in any kind of exercise, or active physical work, there is great waste of muscle tissue, and this waste is repaired by the blood, which at once carries fresh nutritive material to build up the wasted tissue, and brings away the products of the waste undergone by that tissue. The blood in its turn is obtained from the food we eat, and this depends upon the vital activities of other living creatures, animals or vegetables, while the vegetables, upon which all animal life depends, build up their tissues from the inorganic materials of the earth. This power they possess in virtue of the light and heat of the sun's rays, under the influence of which they are enabled to decompose the carbonic acid gas of the air. Thus, then, our power of doing work is traceable to the sun's energy.

Gentlemen, you have all heard of the Evolution Hypothesis—a theory which is now having such an important bearing upon medical science, rendering it more certain, less empirical, less vague, and far more valuable in its direct results. Of the many great and truly marvellous discoveries of modern science, none is so important as that which is called “The Germ Theory of Disease.” It is indeed a subject of intense interest, and one regarding which people generally have not the clearest notions. You are aware that the poison or virus of the numerous fevers of men and animals multiplies in a marvelously rapid manner, and that they therefore spread quickly by contagion and infection. Even so long ago as at the time of the Great Plague of London, the belief was expressed that this pestilence was due to some living organism which entered the blood of man and multiplied there, and that this poison was capable of passing from him through the medium of the air, or, more certainly still, by actual contact, to others. Though, however, this shrewd inference from the facts of disease was drawn so long ago, it is only in comparatively recent times that by the aid of the microscope we have been enabled to detect the real nature of the virus of fevers and other maladies. In the case of very many disorders, both of men and of animals, it has been conclusively proved beyond all possibility of doubt that the virus consists of very minute vegetable germs which multiply in the body at an enormous rate, and by the great disturbance they set up, but too frequently bring on the death of the suffering patient. These germs are mostly Bacteria, Bacilli, and Micrococci, and they are of the very utmost importance, since they are the actual and direct causes of innumerable forms of disease. Scarlet Fever, Anthrax of man or malignant carbuncle, Cholera, Small-pox, Diphtheria, Leprosy, Consumption, or Tuberculosis, and many other infective disorders, have all been proved to depend on the presence of different kinds of vegetal germs in the blood and tissues. How clear it is that all the knowledge that can be gained about these vegetal organisms is of the most profound importance! Anthrax is a disease which attacks men and animals alike, and it is easily propagated.



In the human being it is known as woolsorters' disease, and as malignant carbuncle. It has been supposed to be identical with one of the plagues sent to punish Pharaoh and the Egyptians in the days of the captivity of Israel in Egypt. Now, the germ of this disease is called the *Bacillus Anthracis*, and numbers of these bacilli, which are little stiff rods, are contained in the blood. These rods multiply by division, and when they have free access to the air, bright oval spores make their appearance in them. They are best seen in a drop of blood magnified, so as to appear seven hundred times as large as they really are.

Turning to the disease called Consumption or Tuberculosis, the wildest notions as to its origin and causation are extant; but this is not to be wondered at, seeing that it is only a few years ago, viz., 1882, that the bacillus which causes this dread malady has been discovered by a physician of Berlin called Koch. In all cases of Tuberculosis in man, cattle, and monkeys, this talented observer found peculiar fine bacilli, some with bright oval spores, some without, some smooth and homogeneous-looking, others more of a beaded appearance. These bacilli can be seen by the physician even at an early stage of the disease by means of the highest powers of the microscope in the matter coughed up by a consumptive person, and if he sees these bacilli, he knows for an absolute certainty that his patient is suffering from this horrible malady.

There is another fact of great importance regarding this disease, and it is that it is very commonly brought about by damp, damp houses, damp countries, damp clothing. It is not improbable, though it has not been actually proved, that the malady is communicated to human beings from cows through the medium of milk. Indeed, the whole question of the transmissibility of diseases from animals to man is one of profound significance, and one of which all scientific medical men must have some knowledge. Scientists are on the verge of great discoveries. Within the past ten years facts of immense moment have been discovered, and daily we are learning fresh sets of facts, which alter many old notions as to the treatment and management of disease.

You are aware, gentlemen, that the gas called oxygen is the most important element contained in the air. On its presence, animal life at least, and perhaps vegetable life also, depends, and the purpose of breathing is, on the one hand the inhaling of this gas oxygen, whereby the various parts of the body are oxygenated and kept active, and on the other the expulsion of carbonic acid gas, which is poisonous to animal life, though a source of nutriment to the vegetable creation. Now oxygen seems to be favourable to the growth and activity of bacilli, while its more active allotropic modification called ozone, seems to have a marked retarding effect upon them. This latter agent, ozone, is therefore of great value in combating certain germ diseases. Ozone is more active than oxygen, and possesses greater oxidising powers. It exists especially in sea-air, and hence the great utility of a sea-side residence at a place such as Marblethorpe or Sutton on our coast, and of sea-voyages.

You are perhaps aware that Tubercle, Rheumatism, and Cancer are comparatively common in our country; Rheumatism, indeed, is very often met with. I think that notable spa at Woodhall is not sufficiently valued by us for its remarkable curative properties in cases of old-standing Rheumatism. I may tell you, gentlemen, that for old rheumatic diseases, I regard it as the most important in the world. I have personally visited a great number of the Continental spas, with the view of becoming intimately associated with their special characteristics, but for the treatment of Rheumatism I have met with none so valuable anywhere as the mineral waters of Woodhall.

I have not time, gentlemen, to speak in full of the maintenance of health,

but I may mention some points of importance. It is not generally known how detrimental to health is passion, and how injurious to a proper performance of life's processes is undue trouble or anxiety. Plenty of exercise in the open air is essential to good health, and a calm equable temperament a disposition to be sought after and desired.

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FIRST REPORT OF THE PATHO-BACTERIOLOGICAL EXPERIMENT-STATION FOR CONTAGIO-INFECTIOUS ANIMAL DISEASES OF THE STATE UNIVERSITY OF NEBRASKA, U.S.A. (FRANK S. BILLINGS, D.V.M., DIRECTOR.)

BY THOMAS BOWILL, M.R.C.V.S., ASSISTANT.

*(Continued from p. 112, vol. xxiv.)*

I think it well to mention that the colouring power of the solutions is much increased by adding the necessary quantity of a saturated alcoholic solution of the colouring fluid to a little more than equal part of a solution of caustic potash, one to ten thousand of water. This organism offers some very puzzling biological conditions to the eye of the observer; for, in studying its development with coloured preparations from cultures under the microscope, the observer will often see objects strongly resembling micrococci in appearance; more careful observations, however, will show that this is simply a stage in the development of this organism, and very careful observation will show that the cocci appearing objects invariably have an ovoid form, though not so well marked as in mature bacteria. They proliferate with great rapidity. The first phenomena seen is that the object increases in length and somewhat in breadth, the uncoloured substance, which appears to be a secretion of the poles, although the contrary may be the case, becoming more plentiful, when first one and then the other pole-end, or coloured substance, is separated, leaving two of the cocci-like objects as fine bodies in the culture. These are at first small, but rapidly increase in size, so that in the same field one has an appearance, which would lead him to think, in coloured specimens, that the culture had become polluted, unless he had seen the organism develop under the microscope in what is known as a "hanging drop," which is prepared as follows: Take an object glass that has a hollow chamber ground out in; surround this chamber with a thin layer of vaseline; then take a clean sterilized covering glass and place in the middle of it a drop of sterilized beef infusion or bouillon, which is inoculated from any culture; the covering-glass is now to be carefully turned over and placed upon the object-glass so that the drop is in the middle of the excavation; it is then to be pressed down upon the covering glass, the vaseline making an impervious cavity, so that germs from the air cannot get in and evaporation does not take place.

Beef infusion gelatine is prepared as follows: Fresh lean beef 250 grammes; to this add 500 grammes of distilled water; place in a cold place for twenty-four hours, then strain off until you get 400 grammes of fluid, to which add ten per cent. of gelatine of the best quality, one per cent. peptone, one-half per cent. cooking salt, cook until the albumen is entirely precipitated, then neutralize to a slightly alkaline reaction, then strain off into sterilized test tubes plugged with sterilized cotton—fill tubes about one third—sterilize this mass once more by heat, using care, or the stiffening power of the gelatine will be destroyed. Agar. agar. is prepared in



a similar manner, one and not over two per cent. being substituted for the gelatine. Agar. agar. makes a gelatine that can be used at any ordinary heat of summer without becoming fluid, whilst gelatine melts between twenty-five and thirty degrees per cent. ; it is also of no use to increase the quantity of gelatine, as by doing so you do not get a proper development of the bacteria. Inoculation of these bacteria in gelatine gave peculiar colony-like developments somewhat resembling knots on a fine piece of thread, and not causing fluidity.

Since 1878 an almost continued series of investigations into the cause and nature of Hog-cholera have been made under the auspices of the Agricultural Department of the United States, which are to be found in its reports. The first of these were made by Messrs. Law and Detmers. Law seemed to have considered the disease to be due to a micrococcus, quoting Klein in the following language in the report of 1878 :—" Klein, who, in 1877, cultivated a micrococcus for seven successive generations, and finally inoculated the fifth and seventh generations successfully on two pigs, seems to have established that these microphytes are the ultimate cause of the disease." Detmers, in the same report, seems to have thought that a bacillus was the cause of American Swine-plague, to which he gave the name of " bacillus suis," which, he says, " are found invariably either in one form or another in all fluids, in morbidly affected tissues, and in the excrements (?) and constitute beyond doubt the infectious principle or produce the morbid processes, if transmitted directly or indirectly from a diseased animal to a healthy one!" It is singular that both of these authorities should have received what appeared to be equally positive and confirmatory results from two such entirely different organisms. The work of these two men is, however, entirely eclipsed, at least in volume, by that of Dr. Salmon, who also made his first report to the Commissioners of Agriculture at the same time (1878), and who has been engaged upon a more or less continued series of investigations for the Agricultural Department, upon this disease which have been published in its annual reports ever since.

With Law, Salmon seems to have looked upon a micrococcus as the cause of this disease up to the year 1885, and to have received experimental testimony, which justified him in saying :—" *Surely we have here sufficient evidence that a reliable vaccine might easily be prepared, if we carry our investigations a little way further.* (Page 57, report of 1883.) In another place the same authority says of this micrococcus " *that these experiments were made and accounts of them published in advance of those of M. Pasteur, and the evidence furnished was all that could reasonably be required to decide a scientific question of this kind.*" In the report of 1884, page 229, he (Dr. Salmon) enters into a polemic against Dr. Klein of England, who had discarded his micrococcus in favour of a bacillus, and then says :—" *A large number of observations, similar to the above, have been made, and in all cases, where a pure cultivation has been obtained, the organism which multiplied was a micrococcus, and when the virulence of such cultivated micrococci has been tested by inoculation experiments, typical cases of Swine-plague have resulted.*" Any one who carefully reads these reports, which Dr. Salmon has made, in regard to his experiments with this micrococcus, would certainly be led to the conclusion that " *the evidence furnished was all that reasonably could be required to decide a scientific question of this kind,*" but alas ! it does not seem to have brought Dr. Salmon even to any decisive conclusion, for in his report of 1885, page 785, he seems to have had some doubt about the correctness of this testimony, and that the scientific question had not yet been decided by him. Here he tells us that he was " *perplexed by contradictory results, and failing to obtain any pathogenic germ by isolating the different forms found in peritoneal effusions.* The discovery of a fine bacillus in Germany causing a disease in



swine, which was regarded as identical with Swine-plague in England and the United States, attracted our attention." It is difficult to see why Dr. Salmon should have become so suddenly "perplexed" in the face of the "evidence furnished by him which was all that could reasonably be required to decide a scientific question of this kind;" and which was apparently backed up by the most positive inoculation experiments.

But, alas, for mortal frailty! in the report of 1885 we are surprised at finding that Dr. Salmon no longer considers his micrococcus to have any important etiological connection with Swine-plague. He says, on page 212, report of 1885, "*that in at least twenty-five cases of undoubted Swine-plague, pieces of splenic tissue, when spread out in a thin layer on a cover glass, dried and stained, in some analine colour, were found to contain the same microbe in greater or less abundance,*" and calls attention to an illustration which he has marked plate III. figure I.—"*When strained for one or two minutes in an aqueous solution of methyl violet, and examined with a Zeiss one-eighteenth homogenous lens, they appear as elongated ovals, chiefly in pairs; the greater number present a centre paler than the periphery. This may be due to a greater density or staining capacity of the peripheral portion. The darker portion is not localised at the two extremities, as in the bacteria of septicemia of rabbits, but is of uniform width round the entire circumference of the oval.*" Dr. Salmon gives exactly the same kind of experimental evidence which he furnished in previous years for the etiological connection of his micrococcus of these years with Swine-plague.

It may also be assumed that he has this time "*furnished evidence which is all that could be reasonably required to decide a scientific question of this kind.*" It is also surprising that Dr. Salmon's description of the manner by which this microbe of his develops in gelatine and on potatoes exactly corresponds to the above of Dr. Billings. On page 215, report of 1885, Dr. Salmon says:—"The bacteria manifests growth (on potatoes) by first staining the cut surface of the potato at the place of inoculation with a chocolate colour," which Dr. Billings thinks corresponds near enough to our coffee colour. He also gives a description of its growth in gelatine on page 214, report of 1885, which exactly corresponds to that I have given above for Dr. Billings, and which Professor Schütz gives for that found in Germany, and illustrates it with plates, which show a very marked resemblance to those of the cultures of Dr. Billings.

The description which Dr. Salmon gives of the manner in which his new microbe reacts against colouring matter, does not correspond to any known variety of bacteria or cocci, but to spores, and I must therefore conclude that he has not yet given satisfactory evidence as to its etiological connection with American Swine-plague, for the bacteria which I have myself coloured in the effusions, blood, and tissues of undoubted cases of Swine-plague, under Dr. Billings' directions—(some specimens of which I have the pleasure of laying before you, and which will undoubtedly convince you of their nature) *are invariably coloured at both poles, with a clear centre, in the body of the bacteria, and a blue line of connection along the periphery.* As I have previously said, I have never failed to find this bacteria in every case. As we nearly always killed the animals, I found them in the spleen, kidneys, and lymphatic glands in an absolutely pure condition. In some few cases where the animals had been dead some few hours, but where the autopsies were made early in the morning, before heat had time to set up decomposition of the carcasses, and the animals had died during the night, I found a few cocci and bacteria of putrefaction also present, but the genuine bacteria always predominated.

In England, Professor Walley recently read a paper on Swine-plague before the third annual meeting of the National Veterinary Association of England. I agree with him as to the term "Swine-plague" being the most descrip-



tive and technical designation for the disease. On the other hand, I must object to his definition, by which he describes the disease as a "*specific eruptive fever, peculiar to the pig*," because there is no such thing as a specific fever that has lesions, only produced by the rise of temperature, fever being but a symptom, which accompanies to a more or less degree nearly all irritative disturbances in the animal organism. This practice, not only in veterinary, but human medicine, of describing diseases as fevers, simply because they are accompanied by a rise in temperature, is and has been a great injury to students, tending to mislead them from a true conception of the pathological essentials in disease. The disease which comes nearest to being an exception to the above is *Febris intermittens*, commonly known as fever and ague; but it has its specific symptoms, which, while accompanied by fever, have nothing to do with it, but are dependent upon the presence and action of a known germ (the *Spirocheton Obermeiri*) in the organism. Tetanus is another disease that is accompanied by fever, but has its specific phenomena by which we know it. Swine-plague proper, as I have seen it in America, is by no means an "eruptive" disease, if by "eruptive" Professor Walley means skin-complications. The peculiar discoloration of the skin is due more to disturbances of the circulation and stasis than anything else, though it may be that embolism, due to the micro-organism, plays some part in it; especially as the phenomena seen would seem to indicate that these discolorations are either due to the interference of the circulation in the arterioles or a venous reflux. The *vis a fronti* being interfered with, especially as I find the myocardium in all cases in a condition of *degeneratio adepoisa* (myo-malacia). It seems somewhat singular that when such eminent authorities in England as Klein, Axe, and others have been working for so many years (since 1876) on Swine-plague, they should not have been able to discover the true micro-organism. It is also singular that Professor Walley should have made no mention of any other work done in America than that of Professor Law, and have neglected to mention that of Detmers and Salmon, especially that of Detmers, for, pathologically considered, it gives the best descriptions of lesions of Swine-plague and its clinical variations that have yet appeared. Dr. Billings' experiments go to prove the correctness of Walley's conclusions in regard to abortion, *as the micro-organism has been found in both the amniotic fluid and spleen of fœti where the mother has recently died, and the young were dead.*

Professor Walley's description of the lesions in the kidneys is very meagre, as shown in the autopsy quoted, as in every case which we have seen the disease is characterised by swollen kidneys and an excessive degree of parenchymatous inflammation. But his description of the hemorrhage into Bowman's capsule, or excessive congestion of the malpighian tufts, is quite accurate, as it has been frequently seen here. His remark, that pulmonary lesions are not very constant or necessary, does not correspond to the experience of Detmers or Billings in America.

In an outbreak among seventy-five hogs, which have been placed at the disposal of Dr. Billings, the pulmonary lesions have far exceeded in intensity those of the intestines; the latter, with the exception of capillary congestion and swelling of the mucosa, with more or less intestinal catarrh, which in some cases was entirely missed in the large intestines, having been entirely wanting in ten autopsies thus far made, the animals having died of *Œdema pulmonum*. The pneumonia in hogs, so far as we have seen here, has been of a bronchial character, leading to caseation, and in some instances to necrosis, hemorrhagic infarctions being frequent. It seldom happens that the intestinal tissue becomes complicated by indurated process, unless it be in very chronic cases; in general those tissues are *œdematous* and swollen.

Our microscopical observations in the above outbreak do not go to confirm

Walley's assertion that, "as a rule, the fæces are either semi-solid, or of a liquid consistency;" as constipation has not only been remarked in this outbreak throughout, but in many others. When the intestinal lesions predominate, diarrhœa is undoubtedly present. His description of the mottled appearance of the lymphatic glands, which he compares "to the appearance of a 'queen's strawberry,'" has also been met with by us in all severe cases.

Mr. Archibald Robinson's remarks in the discussion of Professor Walley's paper, "that in the district of Baden, Germany, inoculation has been successfully carried out," show that he does not know what disease the Baden investigations had to do with, or else he has a very poor knowledge of German. The Baden investigations were made by Drs. Lydtin and Schotellius in regard to the protective powers of M. Pasteur's "Vaccine contre rouget," which is the same disease as the German "Rothlauf," or erysipelas of swine, a disease which has no pathological or etiological connection with Swine-plague in Germany, England, or America; the micro-organism of this disease being a bacillus or rod bacteria, while that of Swine-plague in both Germany and America is an oval body.

I have already alluded to the mild course the disease has taken in Nebraska, which will account for the number of pigs inoculated by Dr. Billings, which did not necessarily die. Up to the present time the whole number inoculated has been twenty; number of deaths, eight; and of three rabbits, all died within four days; also inoculated three dogs without any effect, except the formation of an abscess at the locus of inoculations.

On account of Prof. Schutz having described the German disease as an "Infectious pneumonia," and having found a bacteria so nearly corresponding to ours, Dr. Billings decided to introduce the artificial virus directly into the large intestine, thereby lessening the chances of the bacteria being conveyed at once to the lungs, either by the lymphatics or blood-vessels, to the least degree possible. But with all these precautions he had more or less lung-complications in every case, though the intestines also contained lesions. It might be interesting to you for me to report an autopsy on an animal which was subjected to one of those experimental inoculations. The subject, a hog four months old, absolutely healthy and in fine condition, was inoculated with material which Dr. Billings obtained from some sick hogs at Rising, Neb., September 20th, 1886, and which had been carried rapidly through three culture-generations—the bacteria being present and in an absolutely pure condition. This hog was inoculated on September 28th. The following changes took place: October 1st, off its feed, and continued to be more so until it was killed, October 7th, temperature for several days about 104° Fahr.; October 3rd, it began to emaciate and had a distressing cough, with yellowish discharges from the nostrils and a pultaceous discharge from the rectum. Being very sick on the 7th of October, and liable to die before next morning, it was considered best to kill the animal, which was done. No staining of the skin was observed (it was a very black pig). The animal was inoculated as described above, but in some few cases, where we have resorted to subcutaneous inoculations, we have had excessive tumefaction and heat, with discoloration of the skin. On cutting through the skin of this animal, the blood which flowed from the cut vessels was of a dark blue red colour, and soon coagulated and became red on contact with air. The large intestine was agglutinated and covered with a thick, flocculent lymph. The superficial inguinal and mesenteric lymphatic glands were swollen and reddened, and the mesenteric veins injected; bladder full. The small intestines presented a diffused red colour; on opening, the mucosa was found swollen with diffuse capillary redness; Peyer's patches swollen, with an occasional dark red spot in their midst; contents of intestines were fluid. The mucosa of the large intestine was red and swollen; also with dark red spots of various sizes



dispersed through it; ileo-cæcal (or valve of Bauhini) intensely swollen. Throughout the large intestines were numerous ulcerations from the size of a pea to a ten-cent piece, covered with a yellow, caseous mass; spleen enlarged, but not disintegrated; liver enlarged, edges rounded; the acini distended and of a yellowish-red colour (degeneratio adiposa). The interstitial tissue was swollen, and the bile-ducts somewhat distended with bile; kidneys, cortical substance, anæmic, and of a yellowish-grey red colour; medullary substance, red, and the vasa recti injected; slight effusion into the pleural cavity, but the pluræ non-adherent. The pericardium contained about two tablespoonfuls of a straw-coloured fluid; the myocardium was of a yellowish-grey red colour, anæmic, and a few petechiæ on the endocardium. In the lungs were small centres of lobular hepatization. The bronchial tubes and trachea contained a purulent, viscid effusion, the mucosa being swollen and injected; bronchial lymphatic glands enlarged and œdematous; stomach had its mucosa swollen, ulcerated, and covered with a viscid mass, and near the pylorus stained with bile. Microscopic examination of the spleen and blood revealed the presence of the characteristic bacteria.

(*To be continued.*)

## Proceedings of Veterinary Medical Societies, &c.

### ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL, HELD AUGUST 10TH, 1887.

SIR HENRY SIMPSON, President, in the chair.

*Present*.—Professors W. Duguid, W. Pritchard, W. Robertson; General Sir Frederick Fitzwygram; Dr. Fleming; Messrs. J. Roalfe Cox, Thomas Greaves, Mulvey, James F. Simpson, James Storrar, William Woods, and the Secretary.

The SECRETARY read the notice convening the meeting.

The SECRETARY read the minutes of the previous meeting, which were confirmed.

The SECRETARY read the minutes of the previous Special Meeting, which were confirmed.

Professor PRITCHARD said he noticed that the copies of the Revised Bye-laws, which had been circulated, were printed by Oxley and Son, in Windsor; he should like to know whether the printing had been removed from their ordinary printer.

The PRESIDENT said there was nothing to prevent the President having the printing done where he chose. In the present case, however, the Revised Bye-laws had been printed in Windsor to save time and himself coming to London to revise the printer's proof. He had devoted many hours to the revision, and had caused a printed copy to be sent to every member of Council some days ago. The Charter only allowed seven days within which to hold a meeting to confirm the Bye-laws as revised at a previous meeting. Only fifty copies had been printed.

The SECRETARY read the following letter from Mr. George Thatcher, the solicitor:—"I enclose proof of Revised Bye-laws which have been sent me; I have compared them with the Act and Charter, and they appear to be in accordance therewith. I assume that all formalities have been complied with as required by the Charter."

The PRESIDENT stated that all the requirements had been complied with. The meeting had been held within fourteen days from the last meeting, and all the notices had been given.

Dr. FLEMING said that the circular he had received urgently requested him to attend the present meeting, and he had therefore done so; but he must

confess that he was disappointed that the meeting should have been held on the day of the National Association Meeting at Peterborough.

The PRESIDENT said that four clear days' notice must be given, not including the day on which the meeting would be held, and the day on which the notices were issued. The onus of compiling and setting fair the work of the Bye-laws Committee had been absolutely placed upon himself, and he had done his best to make a good business of the matter. That day was really the only possible day on which the meeting could be held, and he must say he had not expected any severe criticism in the matter, especially as the Bye-laws had been standing over for several years.

Dr. FLEMING said he did not convey the slightest censure or disapprobation of the course pursued; he had only remarked that it was an unfortunate coincidence that this meeting should be held on the same day as the meeting of the National Association. He thought that the bye-laws said, "Any time within fourteen days."

Mr. J. F. SIMPSON remarked that the Charter said "Not less than seven, and not more than fourteen." That only gave the President a few days to arrange the matter.

The SECRETARY read the following letter from Professor Walley, addressed to the President:—

"As you are well aware, the Principals of the Scotch Colleges are desirous of doing away with the Summer Session, and in order to enable us to do so we have agreed to open on the 2nd or 3rd of October, and to teach, without intermission (except a short interval at Christmas) until the first or second week in May, so that we may get in the three specified terms of two eleven weeks and one of eight; and we further propose that there shall be only two examinations in the year, namely, at Christmas and early in May, thus reducing expenses, etc. Will you take the sense of the members present at the meeting on Wednesday, if it is held, on these suggestions, so that we may make our arrangements and get out our prospectuses? We think the doing away with the interval in April between winter and summer sessions will be beneficial, by keeping the students to their work—both studying and teaching are very difficult during hot weather, and dissecting cannot usually be carried on after April. Moreover, by the arrangement proposed, the students will not be wasting their time and means by travelling backwards and forwards home in April, and they will get from four to five months' continuous practice in the summer instead of a few weeks, and none at all, as per present arrangement. Please drop me a line to Edinburgh as early as possible as to how these proposals are received by members of Council present at the meeting."

The PRESIDENT moved that Professor Walley's letter be referred to the Examination Committee.

Mr. WOODS seconded the motion.

Dr. FLEMING moved that the letter be read at the next meeting of the Council. It was an important change that was being asked for, and he thought the whole Council should hear the letter before it was referred to the Examination Committee.

Mr. JAS. F. SIMPSON said it was the same thing, because the whole Council constituted the Examination Committee.

Professor PRITCHARD supported Dr. Fleming's proposal.

Professor ROBERTSON said he would second the amendment proposed by Dr. Fleming. The present meeting was a special one, and members of Council were not aware that the matter was to be brought forward. Undoubtedly, in his opinion, the letter should be read to a full Council meeting first, although he was afraid that the next meeting might not be the whole Council but a sub-committee of the Council.

The PRESIDENT said there was this unfortunate objection to the amend-



ments, that before the next meeting of the Council, at which the letter could be discussed (the October meeting), the whole of the examination business would have been threshed out. Under those circumstances he hoped the meeting would allow the matter to be referred to the Examination Committee. With regard to referring the matter to a sub-committee, he would remind the Council that the sub-committee was only granted to tabulate and revise, and thus make more easy the work of the Council, which would meet from time to time as the Examination Committee.

Professor ROBERTSON said that under those circumstances he had no objection in withdrawing his proposal.

The PRESIDENT said that it was quite in order to have the letter read. If it were referred to the Examination Committee they would be gainers by it in the end. He thought it was the unanimous wish to thoroughly thresh out between now and October the whole subject of examinations. He hoped, therefore, that Dr. Fleming would see his way to withdraw his amendment.

Dr. FLEMING said that this was a special meeting of the Council called for the specific purpose of passing certain bye-laws, and was not a full meeting. He thought the proper and formal course would be to have the letter read at the next meeting, and then refer it to the Examination Committee.

The PRESIDENT said he must differ with Dr. Fleming upon that point. His own experience of public business led him to say that they were perfectly in order in having the letter read and then referring it to a committee.

Dr. FLEMING thought that no time would be lost if his proposal were adopted.

Professor PRITCHARD agreed with Dr. Fleming, and said he did not think the matter should be sprung upon the present Council meeting.

Professor ROBERTSON said the letter referred to educational regulations which would be required to be carried out, and it might be referred to the Committee with perfect propriety. But looking at it in true formal light, it really ought first to be brought before the Council. If, however, it was to facilitate matters, he had not the slightest objection to the matter going at once to the Committee, which was the whole Council.

The amendment was then put to the meeting and carried.

General Sir FREDERICK FITZWYGRAM asked whether the Scotch schools could not act in the matter without the consent of the Council. He thought it would be within their legal limits to divide the terms into two, provided they complied with the necessary number of weeks. There would, therefore, be no hurry in sending an answer to Professor Walley.

Professor ROBERTSON said he had discussed the subject in consultation with the teachers of the schools in the North, and he was perfectly certain that, provided they complied with the required number of weeks, they had power to act without asking the Council.

The PRESIDENT asked if any gentleman would be kind enough to move that the bye-laws as amended be confirmed.

Dr. FLEMING moved that the bye-laws be confirmed.

Mr. WOODS seconded the motion, which was carried unanimously.

The PRESIDENT said that the bye-laws would not be seen by the bulk of the profession until next February or March in the new register. It was a question, therefore, whether it would not be desirable to make the profession generally acquainted with the bye-laws, and if so, whether the Committee would have a certain number printed and circulated.

Professor ROBERTSON said he did not think that such a course was needful. When the regulations with regard to the examination of students were settled, they would be incorporated with the bye-laws.

The PRESIDENT thought there would be no harm in letting the matter stand over until October for that purpose. He had had fifty copies of the

bye-laws printed, and that would be sufficient for the members of the Council.

Professor ROBERTSON proposed a vote of thanks to the Chairman, which was agreed to.

#### BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

*(Continued from page 220.)*

When this occurs, ten to one the bull has done some damage in the urino-genital passage, and made any operation to relieve the animal of a more hazardous character. As an aid to diagnosis, and to satisfy myself that I have got a case of *impervious vagina* to deal with, I make an examination per rectum, when I find the uterus very much enlarged, and seemingly holding a large quantity of accumulated debris. The character of the complaint is at once settled, and the sooner she is operated upon the better. Now as to the mode of operation to relieve this abnormality, I expect to find myself at variance with some members of the veterinary profession. Some adopt an instrumental procedure, even at the risk of serious and irreparable damage to the uterine appendages of the animal, forcing an opening through the os with some tubal instrument, such as Reid's probang, or trocar and cannula, or some other instrument. So far as my experience goes, I have never found it possible to obtain a passage with an instrument without great risk, and I prefer the more cautious if slower process of manual operation. With a small hand an operator can manage to worm a passage through the vaginal canal with his thumb and two fingers, and he knows what he is doing, whereas with an instrument, he does not. Once a passage is obtained, and the contents of the uterus evacuated, the insertion of an instrument daily to assist in the subsequent discharge is easily performed. So far as after treatment is concerned, I have employed antiseptic injections, and one combining both anodyne and antiseptic is much to be preferred. I hardly need tell the members of this Association that the best end for animals of this description is to have them fattened for the butcher as soon as possible.

Now, gentlemen, connected with the subject of bovine unfruitfulness is bovine abortion, which ever and anon crops up as a topic to either advance an opinion or form discussion. Both Professor Lewis and our Secretary have had the subject recently before the profession and the public, and it is with great diffidence I to-day make any attempt to reopen the subject before the members of this Association. However, it being a subject which is of the utmost importance to agriculturists, from the nuisance, not to say loss, which it inflicts upon farmers, and if any good at all can be done, it must be through the agency of our profession to provide the remedy, either as a cure or a preventive. With this view constantly before us, I think, with the constantly increasing aids which pathological science reveals, we should not rest till the mysteries connected with this complaint are revealed. On the various causes of bovine abortion resulting from accidents, ill-usage, over-driving, etc., I do not propose to dwell, as these are so very obvious, and out of our control, that it is needless to discuss them in a paper of this description. It is to a class of cases which approaches the endemic or contagious character, which I wish to say a few words upon, and in approaching the subject, it may be as well to confine the discussion to causes which favour this view, therefore I say it is to those cases which follow each other, where a stock of cows or heifers part with their embryos at from six to nine weeks to four to six months after taking the bull. One of the most prominent and favoured views which not only practical agriculturists but veterinary surgeons adopt is, that it is to a kind of sympathy arising from the smell of the effluvia discharging from the



generative organs of an aborting cow which keeps up the habit. But seeing that cows in general are very fond of smelling at discharges from cows after a natural and healthy parturition, and this habit does not produce abortion, in some measure does away with the sympathetic theory. Another cause which scientists have often dwelt on is, that ergotised grasses have a baneful effect on the foetal membranes and uterus, but seeing that experiments have proved that ergot, instead of producing a contracting effect upon that organ, has the very opposite action of retracting, therefore I think both these favourite theories may be abandoned.

I think the experiments of M. Nocard, as set forth in an editorial article in the VETERINARY JOURNAL of January last, not only important but deserve serious consideration by agriculturists. M. Nocard has, to my mind, proved by experiments, that abortion in cows has all the characteristics of a contagious disease. He says that the yellow pus-like matter which drains from the vulva after abortion abounds with micro-organisms of the bacilli and micrococci type, and that these microbes are capable of cultivation in fowl or veal "bouillon" or broth. He also finds that the liquid obtained by scraping the mucous membrane of the uterus of aborting cows is not only acid, but swarming with microbes, especially between the mucous membrane and the foetal envelopes, and after the expulsion of the foetus these micro-organisms exist without impairing the health of the animal, but are ever ready to react upon a new foetus or its envelope, and this, according to M. Nocard, is the cause of repeated abortion in the same animals. He also explains executive sterility to be due to the acid reaction of the uterine fluid, which he says favours the perpetuation of those kinds of microbes, and at the same time destroys the vitality of the spermatozoa. Whether this condition exists in those animals I have previously alluded to as being conditionally unfruitful, but will not conceive, I have no data to form an opinion on. On the other hand, he finds that cows that carry their calves to the full term are entirely free from these microbes, and also that the secretion, or natural discharge, is *neutral*. Calves born alive, that have been prematurely expelled from similar causes, are found to abound with these microbes along the digestive canal, and this explains the continuous bellowing, and the numerous deaths from diarrhoea in young animals. Now, gentlemen, if those ideas of M. Nocard, which seem to have been established on reliable data, are admitted by you, the question of prevention, and also that of medical treatment is much simplified. As to prevention, I think I shall be borne out when I state that the first introduction of this malady on a farmstead is by the purchase of a cow, which has either aborted or come from an infected farmstead, and which in all likelihood brings the contagion with her. What is more frequently seen in fairs or auction marts than cows and heifers which have aborted, the owners of which know how easily non-professional eyes are deceived, and if she can only, by overstocking or other means, be got to show a decent udder, she has only to be represented as a newly-calved cow to pass muster on the face of any rules which an auction company may hold up. The consequence is the incalculable loss inflicted on the purchaser for years by the loss of his calves, and also the profits which accrue from a well-selected stock of dairy cows. *Anthrax* is a disease which the Lords of the Privy Council have recently decided to place under the restrictions of the Contagious Diseases (Animals) Act, but the loss incurred by Anthrax, I venture to think, is but a flea-bite to that inflicted by contagious bovine abortion, and if such associations as this coincide in similar views, and make representations to headquarters, I think the day will not be far distant when this malady will receive similar treatment to Anthrax by being brought under the Act, and thus stop the sale of cows till all unhealthy discharge ceases, and the animal is pronounced safe. As to medical treatment, I think if what I advance turns out

in future times to be orthodox, the treatment resolves itself to giving medicines, combining an alkaline with an antiseptic as a basis, and carminatives as adjuvants. Some good, I think, may be done by the injection of an alkaline antiseptic lotion into the uterus, previous to allowing service with a bull, but of the latter procedure as a remedy for abortion I have as yet had no experience.

Another, and not unfrequent accident or morbid condition attached to the period of gestation, and one which a country practitioner is not unfrequently called to operate on, is complete closure of the Os uteri. A cow is said to have completed her full term of pregnancy; she has suddenly become uneasy, shifts from one side of the stall to the other, and strains at times very considerably. The owner, or perhaps the nearest cow-leech, has been exploring the uterine tract with the view of removing the calf, but the want of a passage into the "calf-bed," and the inability to make one, are serious impediments in the way of unprofessional or unskilled men, hence the necessity to call in the veterinary surgeon to cut a passage. Generally in these cases, on examination we find that no special preparations have been made for parturition. It is on record that professional men have set to work at once, and divided the Os uteri its whole length, and abstracted the fœtus, and the cow has done well. I must confess my doubts as to practice of this kind, and though having repeatedly been asked to operate in this way, I have, up to this time, steadily refused, and with the best results where my advice was taken, and with fatal results when my advice was disregarded. I submit for your consideration the best plan for us to adopt in all or most of those cases is to stop the straining by some anodyne, as Tr. opii, or chloral hydrate, followed up by a dose of laxative or purgative medicine, according to the circumstances indicated by semiology, and leave nature to make her own preparations for expulsion of the fœtus. Generally we find in from four to seven days the cow begins to show symptoms of the natural opening of the uterus by a slimy discharge and more pronounced labour pains, and if the presentation is a natural one, she calves herself without assistance. Therefore, I submit it is the best policy to let such cases alone, notwithstanding any erroneous views our clients may have; at any rate, if they are determined to have the animal operated on in the way I have indicated, let them fall back on their "first love," the cow-leech, and let him destroy her, which, I venture to think, eight times out of ten will be the result.

Gentlemen, having now briefly sketched some morbid conditions attached to the uterus of the cow prior to parturition, if your patience is not quite exhausted, I will introduce for your consideration one or two which occur subsequently, and which, from their urgency, are of rather serious import, not only to ourselves, but to our clients. The first condition of this kind I shall mention is hæmorrhage from the uterus after parturition. This accident or condition is for the most part due to mechanical injury inflicted in the act of abstracting the fœtus by unskilful hands. As you are aware, the internal surface of the uterus presents a number of cotyledons, fitting into similar cotyledons on the placenta. By these highly vascular objects, blood is conveyed from the mother to the fœtus. In removing the placenta from these uterine cotyledons, no blood-vessels are torn across; but by rough handling very often the mouths of innumerable small blood-vessels are torn across, causing extensive hæmorrhage. I need not enumerate the symptoms, the blood being ejected from the vulva, about a quart at a time, mixed with clots. This going on for four or five hours, reduces the animal to a helpless state of emaciation, indicated by hard blowing and debility, the constant and concomitant symptom of loss of the vital fluid. Another cause of hæmorrhage is rupture of the Os uteri, in extracting an extra large or swollen calf. The calf may be presented naturally, and with the usual farmhouse force;



the extraction seems to be going on all right, till the calf gets to about the midribs, when the vulva gives way. To proceed after this happens is very risky, as by the time you have obtained the calf you may find the rupture has extended all along the vagina to the Os uteri, rupturing the vaginal artery, or some of its branches, and the speed at which the blood escapes does not give one much time to either think or study the case. The question is to decide the best means of checking hæmorrhage from the uterus. It must be borne in mind that the uterus of a cow during the parturient stage does not, owing to the non-continuity of the blood-vessels between the uterus and the foetal membranes, contract so readily as in some mammalia, and this defect is an obstacle in the way of administering astringents, either by the mouth or by injection. In the case of ruptured cotyledons, cold water is injected into the uterus by some practitioners, and also applied freely to the loins. For myself, I do not like injections of any applications to the inside of the uterus in these cases, as the force employed sets up an amount of straining which provokes rather than retards the bleeding. I prefer any application to be administered in this direction to be accomplished by gravitation. In the case of ruptured os, the torn vulva, etc., facilitates matters very much by giving room to seize the artery at once, and pull it outside, where it may be ligatured, and this is, in my opinion, all that is required to stop the hæmorrhage. Stimulants should be given freely, and the wound treated as any ordinary wound.

I now come to discuss not only Milk Fever proper, but also other complaints following parturition. *Milk Fever* proper, "*Parturient Apoplexy*," is a derangement seizing cows having a highly developed lacteal apparatus, from three or four days to a week after calving. The udder is often hard, hot, and tender, which has often a tendency to produce a good deal of feverishness. This has the effect of not only interfering with the lactiferous secretion, but also the functions of the stomach and bowels, and from reflex action, the nervous system becomes affected, the gait becoming unsteady, and, finally, locomotion is lost and the animal drops. The appetite is seldom altogether lost and she chews her cud at times. The function of the udder is suspended, and from the milk being thrown back on the system, a good deal of hard breathing is set up, but the pulse remains regular though quickened. The complaint is very seldom fatal, and I submit for your consideration a powerful dose of purgative, diaphoretic, and diuretic medicines combined.

The following suggests itself: Magnes. Sulph.  $\mathfrak{H}$ i, Potass. Nit.  $\mathfrak{z}$ ii to  $\mathfrak{z}$ iii, Sulph. Sub.  $\mathfrak{z}$ iii, with some carminative. Ol. Junip. or Bacc. Junip. may be substituted for the Potash. This, followed up by warm clothing, fomentations to the udder, with frequent drawing, will very often put your patient on her legs in less than twenty-four hours and you get credit for being very clever. If the young practitioner can only get three or four such cases hard running and succeeds, his reputation is almost established and his elder brethren made to look very small. Passing on to another ailment connected with the parturient stage is one which sails under the common flag of Milk Fever, but which in reality approaches more the Parturient Fever of the human female. Its first appearance is generally two or three days after parturition, the first thing observed being the unsteady gait followed by dropping to the recumbent position. The animal is very restless, tries to rise but is unable to do so, stretches herself, and sometimes groans out. Very soon she begins to blow hard, the fever runs high, pulse up to 100, dry muzzle and hot horns. Her brain becomes affected, and this appears to be due to the total suspension of the bowels and kidneys. When no check is brought into play in the shape of medicine, these symptoms become alarmingly increased, and so rapid is the development, that they may run their course in from twelve to sixteen hours after the first appearance, terminating fatally. The cause, as borne out by

the *post-mortem* appearances given by careful operators, is clearly due to the exciting act of parturition. The vessels which go from the uterus are particularly involved, the inflammation sometimes extending all over the peritoneum. Whether hard driving or jostling during transit in railway trucks previous to calving may lay foundation for many cases, by disturbing the balance between the maternal and foetal circulation, is a question I think worth more than a passing thought. The veins contain large quantities of broken-down lymph, and this is seen not only on the surface of the uterus, but all over the intestines and sometimes extending even to the thoracic cavity, whilst in most fatal cases a large effusion of watery serum is found in one or both cavities. I offer no opinion myself as to whether animals slaughtered during the parturient period for this or any other affection are fit for human food, but I invite the opinion of this meeting in any discussion which may follow on the point. The treatment of this complaint consists, in my opinion, to use a vulgarism, "to go the whole hog at once." If called in before the animal is off her legs, bleeding pretty freely may be useful, but as soon as the effusion stage of the peritoneal inflammation sets in, bleeding is out of the question. Large doses of purgative and diuretic medicine are indicated, and Tinc. Opii and calomel are useful not only to relieve pain but to stop the effusion. As getting the bowels to act speedily is very important, half doses may be repeated every four hours, but unless the symptoms are diminished in twelve hours, any treatment we may adopt will most likely be futile. Clothing the body and packing with straw to excite skin perspiration, are good adjuncts in the way of relieving internal congestion and checking the fever. This, with either ammoniacal blisters or hot water to the abdomen, is about all that suggests itself to my mind. Some gentlemen may have something better, and I shall be glad to hear it expressed in the discussion.

The last of the diseases connected with the parturient period which I shall bring to your notice also goes by the common term, "Milk Fever." This is the very fatal disease going under the designation of *Puerperal Apoplexy*. This affection, as most of you are aware, is confined to the brain and spinal cord, the internal viscera being mostly healthy. It comes on generally from twenty-four hours to two days after calving. Heavy-bagged, elderly cows, full of condition, especially in the summer months, are most subject to it; while bad milkers are generally exempt. It runs its course very rapidly; often five or six hours from the first observable symptoms, send the cow to her doom. The complaint, in my opinion, is a very fatal one, more especially when it comes on soon after parturition, and one remarkable fact is that it is seldom seen in cows before the third or fourth calving. The first observable symptom I have noticed is defective peristaltic action of the bowels. The faeces come away in small pieces, and the force is so weak that it slides down her thighs, and over the hocks. The lactiferous secretion is diminished but not entirely suspended, and she both eats food and chews her cud. In the course of an hour or two she becomes restless, staggers in her stall, and finally gets down. All the secretions are now arrested; the pulse may be quick and strong; she begins to dash her head about, moan, and soon becomes comatose, insensible to any external irritant. The pulse gets small and weak, eyes glazed and of a leaden hue and the head drops back on one side. These shortly are some of the more prominent symptoms, and the cause, I think, rests in the superabundant vascularity of the whole system, and the act of parturition, which destroys the balance or equilibrium. Eminent pathologists who have made *post-mortem* appearances a study, tell us that the external surface of the brain is unnaturally red, and that the ventricles contain a muddy fluid, and this exudation is seen at the back of the brain, and also in the spinal cord, especially in the lumbar region. The digestive organs are perfectly healthy, but there is slight congestion of the lungs. From the rough *post-mortems* I



have made I can confirm most of this, but I have observed that the congestion of the brain is attended by actual rupture of the minute capillaries, leaving clots of blood larger than a pea on the surface, with other appearances of a decidedly inflammatory character. As to treatment I think the question resolves itself into the means of prevention more than that of cure. We should encourage our clients to diminish the vascularity of the system of such cows, as we know them to have and which we consider dangerous. This is effected by giving a good dose of purgative medicine a few days before calving. If we are called in at the very onset of the first symptoms, before the cow gets down, bleeding may be of service, but after the comatose stage has set in it is useless and does harm. Powerful stimulants, as whiskey, or Carbonate of Ammonia, combined with purgatives and diuretics are indicated, cold water to the head, and Linimentum Ammonia applied to the whole length of the spine, the udder to be drawn frequently, and she should be clothed up and packed with straw. If the case is to terminate fatally, it is seldom one can administer a second dose without danger of choking, as she loses all power of deglutition. The favourable reaction consists in copious sweating, movement of the bowels, and well-marked head-relief, but upon the whole the treatment is unsatisfactory, and it becomes a point for those practitioners who consider that a cow seized with *puerperal apoplexy* is or is not fit for human food to act and advise as they consider right.

#### *Red Water.*

In regard to this disease, it seems to attack animals under very different conditions as to age, sex, and the general management of stock in different counties in both England and Scotland. For instance, in many parts of Scotland, I am told, it generally occurs in cows about a fortnight calved, but as I have had no experience of a cow in my district ever being attacked after parturition, I will not dwell on the causes which are said to operate in producing it, but leave that consideration to gentlemen from over the border, who are experienced in the matter, to ventilate in the discussion to follow.

Red Water, then, in England attacks both young and old of both sexes indiscriminately. The causes which operate in producing the disease, in certain farms and pastures, may be said to be of an indigenous character, and depend altogether on the presence of some noxious ingesta, but whether the deleterious agent is to be found in the nature of the herbage, the quality of the water, or the leaves of certain trees and shrubs, I cannot say. No doubt cases occur which might add colour and strength to any one of these views.

This is all I can say about the causation, and as it is the last subject in my paper, I propose to go a little deeper into the pathology and symptoms than I have done in the previous ones. The first thing generally noticeable is the colour of the urine, which assumes a pinky colour, but we are seldom called in till the urine has become quite red, or further, black, like venous blood. It might be naturally expected that if bleeding from the kidneys or from any other organ connected with the urinary system, was the cause of the red colour, blood globules would be found in the urine, but pathologists say there is no such thing to be found in any stage of the disease, but that the urine contains a large quantity of albumen, and the quantity increases as the colour deepens, and we are told also that the urine contains an increasing quantity of iron, also a deposit of epithelial scales. I need not tell you that healthy urine contains none of these substances, and as for the last, it may fairly be assumed that they come either from the kidneys or from the bladder. The question is how, and from what source do albumen and metallic iron find their way into the urine? In attempting to answer this

question, I am partly guided by others who have made experiments, not only with the urine, but with the blood during the disease. As you are aware, healthy blood contains large quantities of equal biconcave discs, or blood corpuscles of uniform size, about  $\frac{1}{200}$  part of an inch diameter. In the blood of an animal suffering from this complaint, these blood globules are not only reduced in size, but irregular in shape, due to a portion of their constituents having exuded into the Liquor sanguinis. This, of course, causes the corpuscles to collapse, hence the irregularity of their outline, and as one of the constituents of blood globules is metallic iron, and this being found in the urine in abundance, it is concluded that in the first place, it is exuded into the Liquor sanguinis, and afterwards eliminated by the kidneys. But before this could occur, it is considered that an important change in the density of the blood must have taken place. It is thought that at the first commencement of the complaint a large quantity of albumen is by some means or other abstracted from the Liquor sanguinis, thus reducing its specific gravity as a floating medium, and as a consequence, collapse of the capsules, and an escape of iron takes place, which ultimately, through the natural filter, the kidneys, finds its way into the urine, thus giving it the high colour. This is borne out by the large quantities of albumen found also in the urine, and also the greater the quantity the darker the colour, till it becomes in the latter stages like black water. I have already said that the cause of this complaint is in England clearly proved to be due in a great measure to some noxious agent, which either grows on certain land or exists in the water which the animals drink. The question is, does this agent act as a direct poison, or by locally producing such an amount of super-diuresis as to lead to degeneration of the kidneys? In considering these views it is necessary to consider for a moment what views experimental pathologists hold in the matter, and in this we are told that *post-mortems* revealed the fact that the kidneys exhibited a great want of firmness, and that the uriniferous follicles are very much thinned. This suggests an idea that the complaint is localised to these organs, but again it is argued that the same condition of the kidneys is found under other circumstances where no red urine is secreted. Consequently it would not do to conclude that Red Water is due to degeneration of the kidneys. In favour of the toxic agent, whatever it may be, I would suggest that it acts generally by causing such a derangement of the blood as to cause a separation of the albuminous constituents, and the kidneys become positive agents in eliminating it in an excretory form, and that the colour of the water is solely due to, and intensified by, the amount of iron which escapes from the shrunk globules, and exudes into the Liquor sanguinis. I may be excused if I point out, on the authority of various pathological authors, that any deviation from a relative fixed standard in the principal constituents is productive of disease. In the blood of a healthy animal the gauge is laid down as follows:—In 1000, Fibrin, 2 to  $3\frac{1}{2}$ ; Corpuscles, 110 to 150; Solids of serum, 72 to 88; Water, 760 to 815 = 1000. Thus it will be seen that in Red Water there is a great change in these constituents, and disease is the result. How far the microbe theory may be applied to this disease I am not aware, but in the rage for elucidating the causes of disease by these thread or rod-like bodies, there does not seem to be anything new. Obermeyer, Russ, Stucker, and Dr. Carpenter all have observed them and made comments on them years ago. Shortly, the symptoms are: the animal presents a dull, emaciated appearance, hair on end; animal perhaps will lie for a whole day, often near the middle of the pasture. On approaching, you notice an irregularity in the heart's action shown by a regurgitation up the jugular and hard beating. When the urine begins to assume a black colour, the animal breathes heavily. This is due to thinness of the blood and approaching emptiness of the blood-vessels. She



at this stage loses all power of locomotion, and after this, death soon intervenes. When observed more closely at the commencement the bowels are seen to be relaxed, and this relaxation is followed up by obstinate constipation. As to treatment there is a variety of opinions, but I find, as a therapeutic agent, nothing is comparable with Chloride of sodium as a basis, with Hydrarg. sub. chlor. and some carminative as adjuvants. Half doses to be repeated every eight hours, if necessary. When purgation takes place, the urine generally begins to clear, but not always, when small doses of *Ol. tereb.* may be given every three or four hours till the desired effect is established. The subsequent debility is overcome by administration of vegetable and iron tonics and stimulants, with good food and nursing. On the whole the disease is not a very fatal one, if we are called in at the onset; but, if not called till the vessels are nearly empty, there is only one termination.

Gentlemen, this concludes my paper, and I have now to invite your free discussion, and if you come to the conclusion that the text of this paper, or any part of it, is based on an erroneous hypothesis, to give expression at once to your views; and don't mind my feelings in any way.

The CHAIRMAN: The paper you have just heard from Mr. Harrison is a very elaborate and excellent one, any part of which would give ample scope for discussion. I invite the gentlemen present to give their views on the subjects.

Mr. THOMPSON: I have had very great pleasure in listening to Mr. Harrison's paper. It is a very good one, especially for country veterinary surgeons. (He discussed Mr. Harrison's remarks at some length, and described cases in which he had had great experience.) Mr. Harrison did not believe in using instruments, he seemed to manipulate with his hand much better; but Mr. Thompson said that he had found an instrument most useful, and had had one made especially to operate on animals which were afflicted with a collection of fluid in the uterus, such as Mr. Harrison had described in the first part of his paper. Mr. Thompson described his mode of operation in these particular cases. As a rule, animals afflicted with this disease showed signs of it about ten days to even six weeks after being bulled, but it had occurred in his practice once in a heifer ten months old, which had never been near a male animal, and in this case the secretion was of a whitish colour; and where they have had connection with the male the fluid was generally of a brownish colour. This is a subject of very great importance to country veterinary surgeons. In some parts of the country, and in towns, the disease is totally unknown; so for that reason we are very much indebted to Mr. Harrison for bringing the subject forward.

Mr. POTTS said that he had had great experience in the particular disease which Mr. Harrison had pointed out in the first part of his paper. Mr. Potts was of opinion that medicine was of no use at all; tapping was the best means to adopt, and this he did by means of an ordinary trocar and cannula, per vagina, and in some cases where the fluid did not come away freely he left the cannula in.

Mr. ASHLEY asked Mr. Thompson if he understood him to say that it was the Os uteri that he tapped.

Mr. THOMPSON said that it was.

Mr. ASHLEY was of opinion that it was the impervious hymen.

Mr. ARMSTRONG said that he quite agreed with Mr. Ashley that it is not the Os uteri which is tapped, but an impervious hymen, which could be felt on examination of such a case, by the vagina, as a fluctuating tumour, and of different character altogether to the Os uteri; and what was more, the operation would not be so easily performed if it was the Os uteri which had to be operated on. When the instrument is introduced into the vagina very little pressure is needed in most cases to tap them. Then, again, I am of

opinion that if the os of a young beast was operated on in such a manner, the results of the operation would be of a more serious character than what we are accustomed to meet with.

Mr. ASHLEY said you are unable to feel the os until you break down the partition just referred to.

Mr. CARLISLE: I have seen a good many cases of this complaint, and operated on as many as I have seen; the cause of the disease was enclosed in a sack and not in the body of the uterus at all. Mr. Carlisle was of opinion that the trocar and cannula exhibited by Mr. Thompson was not even large enough to do the operation properly; because if you make a good large opening you have no trouble of repeating the operation. It happens that you are never called in to operate on a cow that has had a calf; it is always in a young female, such as a heifer after its first bulling. The operation is simple enough; the thing is, How do we get this secretion, and how is it brought about?

Mr. HARRISON: Mr. Carlisle wishes to know the cause of this collection of fluid. Female animals of the bovine type have periodical discharges every three weeks during the œstral period, and when there is closure of the os or vagina there is no escape for the fluid, and the animal coming in heat for say twelve months, a large collection of menstrual discharge is accumulated, and that is the cause of the complaint.

Mr. CARLISLE said that in France the operation was performed by making an incision through the rectum into the sack, but he was not in favour of the French mode of operating in this particular instance.

Mr. CARRUTHERS said that he was satisfied that the collection of fluid was in the womb.

Mr. DONALD: There has been a good deal said about the operation for the relief of these cases, but that is a simple matter. The main thing to be got at was the cause, and if we look at the anatomy of the generative organs and consider the physiology of menstruation, he thought that we were able to satisfactorily explain all these cases, the source of the collections and their retention. It is a condition commonly met with in rural practice, and in the majority of cases, the obstruction was the imperforate hymen, and not the Os uteri, which was usually operated on—at least it had been in those which he had operated on. He was of opinion that it would be a very difficult thing to operate on the os in a young heifer, in the way that had been described. He also contended that he had known heifers conceive and bring forth naturally after the operation, and he had also known cases relieved spontaneously by paining.

The CHAIRMAN: I have not seen so many cases, and my experience is that the collection is not in the uterus, but within the vaginal walls, and in each case I opened them with my finger, and the fluid came away. He said he could not understand how there was so many more cases in Cumberland and Westmoreland than in Scotland. He had not seen anything like the number of cases which appears to be general here. He was also of opinion that it would be an impossibility to operate on the os with the ordinary trocar and cannula, as they were not of sufficient length to reach the os, and penetrate through it into the uterus.

Mr. THOMPSON said that Mr. Harrison was very elaborate on Milk Fever, giving No. 1, No. 2, and No. 3 kinds. We old practitioners have seen all these cases, and I have never seen them divided so naturally before as Mr. Harrison has done to-day, and as for the treatment we had better say little about it.

The CHAIRMAN: There is no doubt but that this is also a very important subject, and Mr. Harrison is right in his subdivision. We have simple Milk Fever, which is not difficult to treat. Apoplectic Fever is the one which gives



us all the trouble, and successful treatment of this seldom happens. The urine ought in all cases to be carefully taken away with the catheter; the animal ought not to be allowed to lay on its sides. It ought to be propped up; if not, flatulence takes place, and the animal gets worse. Severe purgatives have never been successful with me. Many years ago the late Mr. Greenes, instead of applying mustard, etc., to the spine, used to iron their backs with the ordinary flat box-iron.

Mr. THOMPSON: Has any gentleman tried the thermometer in these cases? I believe I am right in saying that the thermometer does not rise in these cases, therefore there would not be any increased fever. If you put the thermometer at 95 degrees F., it may rise to 97 or 98, but in none of the cases does it go above the ordinary temperature.

Mr. DONALD: My experience in regard to the thermometer agrees with Mr. Thompson. I have often seen where a case looked very hopeful, and after a good dose of salts it rapidly became insensible, and never rallied more. Once they become insensible I cease giving medicine, and in these cases I always use treacle as a purgative instead of salts.

Mr. CARLISLE: I daresay that you will all have found cases where you could not safely administer anything without the air of the stomach pump. In one case I cut into the rumen of a cow and put the medicine directly into the stomach through the opening with a cannula, and in two days she was well again. The most important thing in treatment is the use of good stimulants and strong counter-irritants to the spinal column.

Mr. ASHLEY said that in two cases he had administered medicine through the cannula directly into the rumen, but he found the gas very troublesome.

Mr. CARLISLE said that he had found the same thing.

Mr. THOMPSON said, in his opinion, Milk Fever was due to a succession of shocks to the nervous system, and mentioned the fact that, taking all the milk away at once was a great shock, and he knew one very large dairy where the cows were only partially milked, and several times a day, until all danger of Milk Fever was over, and this was tried as a preventive with the very best results.

The CHAIRMAN said he agreed with Mr. Thompson with regard to the milking, and he thought the disease would be easier dealt with if owners could be persuaded to change the diet a few days before calving, and limit the animals to linseed cake, bran, and dry straw, and stop the use of all succulent and green food, or food of a fermentable character. My opinion is that the excitement of calving causes the digestion to cease, and then fermentation sets in very soon, and the action of the stomach on the brain is very great.

Mr. DAWSON said prevention was the gist of the whole thing, and that recommendation ought to be given to the owners to have a veterinary surgeon called in, to advise as to their proper treatment before calving.

The CHAIRMAN said with regard to abortion he was very much inclined to think that it was possible for the germs producing abortion to be transmitted from the male into the vagina of the female, and thereby cause the female to abort.

Messrs. DAWSON, CARLISLE, and COATS also expressed their views in accordance with the Chairman.

The CHAIRMAN then moved a vote of thanks to Mr. Harrison for his very able and elaborate paper. Many points in Mr. Harrison's paper have been put to one side, though equally interesting. Matters had been mentioned that day, which would have the effect of compelling him to turn his attention in their direction; they are worth close investigation.

The motion was put to the meeting and carried unanimously.

A vote of thanks to the Chairman concluded the meeting.

JOHN ARMSTRONG, *Hon. Sec.*

## SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the above association was held at Laker's Hotel, Red Hill, on Thursday, July 30th, when a most interesting paper was read by Professor Penberthy on the subject, "What is Known as to the Relationship of Scarlatina in the Human Subject to Disease in the Cow." The chair was taken by Mr. J. D. Barford, of Southampton, the President, and there were also present, Messrs. E. A. Hollingham (Hon. Sec.); Legge, Dorking; J. B. Martin, Rochester; F. W. Wragg.

Letters of apology for non-attendance were read from Messrs. Raymond, Price, Rock, Morgan, Holman, and Sir Henry Simpson.

Mr. Herbert Davis also wrote to the effect that, owing to severe illness during the last two years, and having sold his practice, he regretted to ask that his name should be taken off the list of subscribers—at least for the present.

The meeting accepted the resignation with extreme regret.

The HON. SECRETARY next read a letter from Mr. Cox, thanking the Association for the compliment they had paid him in re-electing him as a member of the Council, and stating that he appreciated highly this farther acknowledgment that his services in the interest of the Royal College had met with the approval of so many of his professional brethren.

Mr. WRAGG verbally tendered his thanks to the members of the Association for their kind support at the last election of the Council. He assured them that the best interests of the profession would always be studied by him, and he should vote for those measures which, in his humble opinion, would tend to raise the status of the profession, and be for the benefit of his professional brethren.

The PRESIDENT said that, before they proceeded with the business of the meeting, his first duty—and a very pleasant one it was indeed—was to tender them his heartfelt thanks for the great compliment they had paid him in electing him as their president for the second time. They would bear him out—those who were present—that he made a very strong protest that he should not again be nominated, feeling as he did, and he felt so still, that he was keeping out of the chair another who was quite as capable of filling it as himself; in fact, there were several who were quite as able as himself of taking the chair. At any rate, from pressure and the very kind and unanimous vote given, he felt he could not refuse the compliment which they chose to pass upon him. That circumstance brought him to the position which he held that day. He certainly very much regretted that, at the first meeting of their second year, there should be such a paucity of attendance, but he presumed that, as they found was the case in the South of England, members were so scattered, and circumstances cropped up from time to time, that kept them from attending the meetings, although they had selected that place as being a central one, and easy of access to members between there and the coast, and from London and other parts. But however small they were in numbers, he trusted that the same views actuated them as in the past, and that was to uphold the principles of the Association, and advance the interests of the profession in any little way they could. It had been the custom generally for the President to give a set address on his election to the office which he held, but he ventured to think that to deviate occasionally from that course was probably a wise consideration. They were not met there to hear any set address from the President, inasmuch as Professor Penberthy had kindly acceded to a request he made to him a month or two ago, that he should give them an address on some subject he might choose, and he (the chairman) ventured to suggest the subject which he had proposed for their discussion that day, seeing that latterly in the London press it had been causing some anxiety and some discussion between the medical profession and themselves.



They were met there that day after the result of a very auspicious occasion. He felt extremely strong in his loyalty to his Sovereign, and that was the first opportunity they had had since the events in London and the provinces of the previous week of mentioning, as members of the profession, the auspicious event which had taken place. He repeated that he felt most strongly and most grateful when he said that the events of last week had shown to him, as he had no doubt that they had shown to all loyal and true subjects of their Sovereign, that there was that loyalty and affection for the throne in England which they all so much admired and desired. (Hear, hear.) It had been the custom wherever any society or body of Englishmen had met lately to take a review of their proceedings during Her Majesty's reign, and if they would allow him he would just take a brief retrospect of their doings in the Association during the past year. At their first meeting he was elected President, and they did him the honour of assembling at his native town. He was delighted to see so many members of the profession assembled to do him honour, and he was glad also that some of the chief members of the medical profession, whom he invited, responded to the invitations. He hoped they passed not only a very enjoyable, but also a profitable afternoon. It was only for him to remind them that they had an interesting and instructive paper from their late president and chief, Dr. Fleming, on the subject of Rabies. Their second meeting was at the First Avenue Hotel, when Professor Robertson read a paper, which was also of a very interesting character. A few months ago, at Lewes, Professor Duguid was good enough to give them a paper on the progress of the profession during the last fifty years; and he thought, taking it altogether, that the year's work of the Association had been instructive and interesting. He did not know that anything very special had occurred outside the Association, which would call for any particular comment. One little incident, probably not of a very pleasing nature, occurred in Edinburgh last winter, which he might allude to, but he trusted that the dispute would be amicably settled, and that the discussion and publicity it had caused would prevent its recurrence. Then there was another matter, as he recently observed, which had caused considerable discussion, viz., the diseases which were communicable from animals to man, and back from man to animals, to a certain extent, for that was the theory which had been advanced; and acting on that, was partially the reason why he suggested the subject to Mr. Penberthy for their discussion that day. Experiments were now being carried on, and he could not help thinking that the communicability of Scarlet Fever from the cow to the human subject through the milk supply was of national interest, and could not be otherwise than interesting to them as a profession, as well as the medical profession, especially when he saw by a lecture given before the Royal Institution a little while ago, that the veterinary profession were accused of apathy, and of not taking their part in so important a subject. For that reason he had asked Professor Penberthy to bring the subject forward. (Hear, hear.) The President, in conclusion, read a letter from Mr. Edgar, of Dartford, who forwarded a patent pad shoe, which, he said, had been invented by a Dartford farrier. The writer added that it possessed all the advantages of Sheather's pads at about half the cost, and could be cut to fit the smallest foot. The price of the sample forwarded was two shillings per pair.

A slight discussion ensued upon the merits of the new patent, which was not very favourably received, preference being given for Sheather's shoes.

On the motion of Mr. HOLLINGHAM, seconded by the PRESIDENT, Mr. King, Tunbridge Wells, was nominated a member of the Association.

Professor PENBERTHY then proceeded to read his paper, which was as follows:—

Some two or three weeks since I received from your President a request to bring a subject before this meeting. Following this came a suggestion that a short paper on the above might prove interesting. My compliance with this request must not be regarded as evidence of the possession of any special knowledge of the subject or superfluous time for special preparation. My apology for presuming to occupy your time must be my regard for the great importance of that aspect of our professional work which includes the conservation of public health. The security of society is the aim of all well-directed human effort, and there must be a definite relation between the social status or public appreciation of an individual, or collection of individuals, and the share taken by him or them in the perfection of that state of security. The diffusion of light by experimental research among the causes of disease appears to me to show that means at the disposal of the veterinary profession are of increasing magnitude, and it behoves us, gentlemen, to carefully prepare ourselves for their proper use. Knowledge respecting the communicability of disease from the lower animals to man, I hope, we all regard of paramount importance. It does not, however, seem that this regard is generally realised, for, in course of a recent lecture by Dr. Klein at the Royal Institution, that scientist took advantage of his position to state, "Judging from the attitude of the veterinary authorities, I am afraid the veterinary profession has not yet grasped the full responsibility that rests on them, both towards the general public and the dairy farmers. That the disease in the cow which I have described to you is as yet unknown to the veterinary profession does not do away with the existence of such disease, and I venture to say that, being as yet unknown to and unrecognised by them, should be so much more stimulus for their trying to recognise it." These remarks elicited signs of approval from his audience, and in course of a day or two were followed by a letter to the *Times* from Dr. Seaton, who stated that the "attitude of the professors of veterinary science was opposed to the scientific study of the Cow Disease." This charge I thought likely to produce an unfair impression, so I challenged it in a communication to the same paper. It has not yet been replied to. I mention these matters for the purpose of indicating a certain disposition to depreciate the value of our professional services, and the great necessity for inquiry and observation by us on such points. The object of the following remarks, on a subject which has, during the last few weeks, so engaged the public mind, is to elicit the experience of members with this Cow Disease and any relation of it to human disease.

With our present knowledge of specific diseases, including a recognition of the multiplying power of the disease-producing factor, it could scarcely be doubted that Scarlatina of the human subject was due to a microbe. As long ago as 1872 McKendrick described a micrococcus, and from this time to the present various observers have identified micrococci, and even bacilli, with the cause of the affection. Notwithstanding the fact that milk was often the accredited carrier of the morbid agent, I am not aware that, until 1882, any strong view was expressed as to other than a human source of infection. In this year Dr. Buchanan, in a report to the Local Government Board, gave it as his idea that milk may not always be contaminated from the human subject, and says that a definite disease was producible in the cow by means of scarlatinal infection, producible most readily when the cows were in milk. Among the most interesting characteristics of this disease was its quality of communicability from one animal to another by inoculation. In 1885, Dr. Power stated that he believed the disease (Scarlet Fever in human subjects) belonged to the constitution of the cow.

The position now maintained by the medical officers of the Local Government Board appears to me to be that a comparatively mild disease of the cow is capable of producing Scarlet Fever in the human subject. Scarlet Fever



prevails in England perhaps more than in any other country, and causes the highest mortality of any epidemic disease.

As far as I know this condition has not been recognised by the veterinary profession ; it is certainly incumbent on us in conjunction with any and every other body to prove or disprove its existence.

As most of us are aware the present manifestation of public interest in the matter accrued to the report of the lecture of Dr. Klein before referred to. The investigation of an outbreak of Scarlatina in certain districts of London by Mr. Power, Inspector of the Local Government Board, led that gentleman to the apparently inevitable conclusion that the virus of the disease was distributed with milk among the customers of certain dairies. Farther inquiry appeared to exclude the possibility of the said milk having been contaminated from a human source. Results of previous investigations in human Scarlatina having a similar bearing, attention was directed to the cows supplying the dairies whose customers were affected. It was found that a disease of the teats existed on the farm, and Mr. Power's report invites the conclusion that these affected cows supplied the contamination. In his own words, " that the influence belonged to the constitution of the cows ; was, in fact, some species of cow disease," and it was very probably an infective disease communicable from cow to cow.

The services of Dr. Klein were now sought to study the nature of the cow disease.

This observer visited the affected sheds at Hendon on December 31st, 1885, and found the disease very general. He thus describes the condition in the cows :—" The animals looked thin, but not strikingly so, excepting in one or two cases of animals that had only a few weeks ago been admitted to the place, and which, therefore, had calved comparatively recently. As regards the feeding capacity of the affected animals, their milking power, and their body temperature nothing abnormal could be detected.

" As a rule, *i.e.*, in most animals, the disease affected the teats, but in some there was also on the lower part of the udder here and there an ulcer. In such animals patches denuded of hair were noticed on various parts of the skin, the tail and back particularly. In these parts the epidermis was scaly, and the cutis more or less thickened. On the teats and udder were several flat, irregular ulcers, varying in diameter  $\frac{1}{4}$  to  $\frac{3}{4}$  of an inch : some more or less circular ; others extended in a longitudinal direction on the teat. The ulcer was covered with brown or reddish-brown scab, which, when scraped away, left exposed a granulating, slightly indurated base. The margin of such ulcer was not raised, nor was there any perceptible redness of the skin around. In the earlier stages, 'a small vesicle made its appearance on a greatly swollen and red teat, in course of a couple of days assuming the character of the above ulcers. In another cow an ulcer, about  $\frac{1}{2}$  inch in diameter, in its centre was becoming covered with a scab, while at its margin vesiculation was distinctly visible.' It mostly affects the teats.

" A cow brought to the Brown Institution, whose ulcers were at fullest development on 4th January, was killed on 9th January, the sores then decreasing.

" Both lungs exhibited on the *upper posterior lobes* numerous petechiæ under the pulmonary pleura, the peripheral lobules of these parts being much congested. There were numerous adhesions by recent soft lymph between the lower lobes of the lungs and the costal pleura, particularly laterally.

" In the liver there were several reddish streaks and patches reaching from the surface of the organ to a depth of about  $\frac{1}{4}$  of an inch. In these patches the liver tissue is much softened. The spleen and kidneys, with the exception of slight congestion, appeared normal. In the placenta there were numerous petechiæ.

Speaking of another cow, killed on 12th March, Dr. Klein says:—"For some days previously the animal had been getting very thin, notwithstanding its ravenous and excessive eating.

"*Post-mortem*.—In the lungs numerous lobules, especially in peripheral parts, which showed great congestion. There were in addition pleural adhesions, the cortex of the kidney was congested, but its medulla was pale."

Section of the ulcer was like that of Sheep-pox, but with less infiltration into the corium. Microscopic examination of the liver showed smaller or larger foci of inflammation, small cells, numerous diplococci and short coccus chains surrounding the inflamed areas. Kidneys showed well-marked Pomerulo-nephritis.

With scrapings of the ulcers, taken during life, four calves were inoculated in the skin of the groins and ear. In course of four or five days swelling and imperfect vesiculation had taken place about the spot of inoculation; within eighteen days healing was complete. Ten guinea-pigs inoculated at same time gave negative results, and one out of three dogs showed a vesicular eruption.

Search, by means of microscope and culture of material from ulcer of the cow's teats revealed to Dr. Klein micro-organisms, spherical bodies arranged as diplococci, and as shorter and longer, straight, wavy, or curved chains (streptococcus). This microbe was similar in physical properties, and in cultural characters, to one found in Foot-and-mouth Disease, but differed from the latter in the fact that when cultivated in milk for two days at 35°C., the milk was turned completely solid.

Inoculation of a calf with cultivation of this streptococcus was followed in twenty-six days by death. We find no description of the condition of the animal during life. *Post-mortem*—appearance of subcutaneous tissue at seat of inoculation, the inguinal glands, peritoneum, liver, kidneys, ileum, mesenteric glands, lungs, pleura, bronchial glands, pericardium, and throat indicated severe vascular derangement. The hairy parts of the skin were not examined.

At the same time another calf was inoculated. We get no description of it till nearly five weeks after, when we learn there are "around the nostrils and lips of the mouth numerous irregularly outlined patches, not raised above the level of skin." These patches had a discoloured, brownish, very slightly raised margin, and a paler centre; they were round or irregular, some as small as  $\frac{1}{8}$  of an inch, others four to six times as large. This calf was killed on the day following the above discovery, and visceral lesions similar to, but less severe than in the former calf were found. Cultivation of heart's blood yield a growth of streptococcus, in all respects identical with that before described.

From the foregoing the deduction is made that by inoculating material from the ulcer of the teat of the cow into the skin of the calf, a local disease identical with that of the cow is produced; while cultivated virus injected subcutaneously sets up a general disease, resembling, to a considerable degree, in its anatomical characters, human Scarlatina.

One experiment, though not conclusive, tended to prove that the virus was not contained in the milk uncontaminated from the teats. A second experiment did not confirm this view. Milk was a very suitable soil for cultivation of the virus.

Having further prosecuted his study of the micrococcus, Dr. Klein in his lecture on 29th May last announced that "this microbe (*Micrococcus Scarlatina*) is the cause of human Scarlet Fever; further, that it produces in bovine animals a disease identical with the Hendon disease and Scarlet Fever, and that consequently while the cow is susceptible of infection with human Scarlet Fever, it can in its turn be the source of contagium for the human species, as was no doubt the case in that epidemic from the Hendon farm."



Micrococci apparently identical have been found in and cultivated from condensed milk (of the Rose Brand). From the blood of a monkey, said by Dr. Klein to have died of Scarlet Fever, the same micrococcus has been obtained.

Following closely on the delivery of Dr. Klein's lecture came the publication of some experiments by Drs. Jamieson and Edington, of Edinburgh University. The observations of the former were of a clinical character, mainly tending to prove the position of the virus of Scarlet Fever in different stages, and suggesting measures for curative and prophylactic treatment.

Dr. Edington, studying the disease from a bacteriological point of view, found eight different kinds of microbes, two only of which when inoculated into rabbits, guinea-pigs, and pigs, were capable of producing marked change. One of these, a diplococcus, produced some erythema. The other a bacillus, which, "when inoculated into rabbits and calves, is capable of producing a disease in all respects identical with Scarlet Fever in the human subject." Referring to some inoculated calves, Dr. Woods expressed his conviction that the disease which these calves suffered from, as the result of the inoculation with the bacillus, was Scarlet Fever, and not any mere septicæmic or erysipeloid disease.

It would appear, gentlemen, that the foregoing is the substance of what has been made known to the world concerning the relation of human Scarlatina to a disease of the cow. One observer of high repute states that Scarlatina in man is due to a streptococcus, and that the disease among cows at Hendon was due to a streptococcus; that inoculation with the streptococcus from human Scarlet Fever produces the same disease in the cow as the inoculation with the streptococcus from the cow disease; indeed, that they are one in microscopical, cultural, and pathogenic characters. The other observers, occupying good position and opportunity, assert that Scarlet Fever of man is due to a *bacillus*, which, when inoculated into calves, produces a disease identical with Scarlet Fever in man.

The Scarlatina of cows of Klein is a systemic disease so mild that neither milking power, appetite, nor temperature is disturbed. *Post-mortem* appearances of animals killed after inoculation with material taken directly from the ulcers are described on the lines of those of human Scarlet Fever, but their mildness does not convey the idea of a striking likeness. Degree is at least different, but we must not forget that these cows and calves were killed, and did not die naturally. There is no evidence of sore throat mentioned. Squire: 111 with recovery, 115 fatal. In human Scarlatina the phenomena of fever are marked, and according to Squire, sore throat is always present. Indeed, the similarity between the condition described by Klein in the cow, and human Scarlatina as witnessed by myself, and described to me by specialists, is by no means striking. One peculiarity of the narrated experiments of Dr. Klein is that four calves inoculated with material direct from the diseased teats of the cows are described as having suffered from the same mild disease as the cows supplying the virus; while two calves inoculated with a cultivation (third day sub-culture) engendered a severe disease. One of these calves succumbed in twenty-six days, and *post-mortem* examination showed extensive and well-marked visceral disease. The other lived thirty-four days (no symptoms till now in either case being mentioned in the report) when an eruption about the mouth was noticed. When comparing the severity of this latter disease with the mildness of the former four, it is somewhat surprising that no symptoms are mentioned till thirty-five days after inoculation. Much stress seems to be laid on the appearance of the nose and lips of this latter case, which, judging from the description of Dr. Klein, I believe is not at all uncommon in calves, while it is only in this one case out of six inoculated that such lesions beyond the seat of inoculation are described. It is

certainly most peculiar that cultivation of the streptococcus should at once have the effect of increasing its virulence and shortening its incubation period.

We are told, too, that the streptococcus was in the blood or cultivations of it. This must be considered evidence in support of the view of identity of the disease in the six calves and *ceteris paribus* of human Scarlet Fever.

One matter of circumstantial evidence is wanting, viz., the production of Scarlet Fever in the human subject by inoculation with matter from the ulcers or cow's teats. This, as a result of direct experiment, of course we are not likely to get. The Scarlatina of calves of Dr. Edington, on the other hand, is a markedly febrile acute disease, as, according to Dr. Woods, presents many of its ordinary features during life and on *post-mortem* examination. Time at our disposal will not admit of an analysis of Dr. Edington's report. One statement, however, is worthy of remark, and must carry some weight in the assessment of the value of experiments. The *rectal* temperature of the calf is put at 99.6, and this twice in one day. The average of a large number of registrations of my own is 102.1, while in no case was one lower than 101.8.

Writing in 1883, Dr. Squire states "that in no case has any diseased state of the cows been discovered to exist." From this it is evident that the possibility had been recognised, and the cow disease sought for in connection with outbreaks, and had compelled the conclusion that milk was merely the medium of conveyance of the human virus to suitable situations. Now the public are confronted with the view of a great experimenter that the cow is the subject of Scarlatina, and a producer as well as distributor of its producing factor. The position is to our profession a most important one. Should further observation and experiment verify Dr. Klein's conclusions, our function in relation to the conservation of public health must become enhanced, and means adopted for dealing with the disease at its source. If it be proved that a "Cow Scarlatina" possesses the characteristics pertaining to most specific contagious diseases, one attack is likely to give immunity for a longer or shorter time. And as the disease in the calf is of so mild a type, the compulsory inoculation of all heifer calves should be a matter for consideration.

Whether the communicability of the disease from the lower orders to man be merely a hypothesis or an undeniable fact, duty compels us to make ourselves masters of the situation. To me it is a matter of regret that our knowledge of such subjects should be curtailed by a disregard of one branch of medical practitioners for the other. Experiments, as the foregoing, would, to me, be infinitely more valuable if an expert, with special clinical and *post-mortem* experience, were associated with the eminent bacteriologist and microscopist.

I will conclude these remarks, again expressing the wish that they may elicit the result of your experience with ulcerative disease of cows' teats, and any other information bearing on the subject at issue.

The PRESIDENT said that the subject certainly opened up a new era for them. He could not help thinking that the evidence must be confirmed by more facts before it could substantiate what Dr. Klein had laid down.

Professor PENBERTHY said he happened to be behind the scenes at most of what had been done in this matter, and so far as he was concerned, Dr. Klein's assertions would want a great deal of corroboration. A report had been issued by Professor Axe, who investigated the matter for the dairy farmers, but he (the speaker) did not say much about it, because it was really a general and not specific report. Dr. Klein, however, was dealing with a specific matter, and it was supposed to be the only thing known as to the relationship between Scarlatina in the human subject and disease in cows.



The letter of Dr. Seaton, an authority on vaccination, which was recently published, was severe on the veterinary profession. It suggested that the public were not to be dependent on them for information on such matters; in fact, the profession were not worthy of the position they should occupy, and were adverse to the study of that or any other diseases. He (the professor) sent a letter to the *Times* the day after, for the veterinary world was up in arms, but the *Times* was a long time before it accepted the letter, and eight days elapsed before it appeared. (Letter here read.) That letter had not been replied to, so that if there was any feeling, it had been silenced by it or something else. He had known Dr. Klein for a long time; he always fought a man, no matter who he was, so they must allow that for him.

Mr. MARTIN thought the matter should be discussed, and he should have regretted it extremely had he been absent that day. The subject was so important that their reputation was at stake, and it was essential that they should exert themselves to prove to the public that they were interested, and had some knowledge of bovine diseases. Milk was a very absorbing fluid, and he recollected a case where it had been in a dairy where there was Scarlet Fever in the house. The doctor asked him if he had any idea that the milkman in the neighbourhood had Scarlet Fever in his house, and by means of his milk was conveying the disease to the different people he served. He (Mr. Martin) could quite understand that. Last year, however, they had a case at Canterbury which was very important, and which had found its way into the public papers. It was alleged that the milk of a certain man's cows conveyed Scarlet Fever to different people who consumed the milk, and he (Mr. Martin), at the request of the owner, went and examined the cows. He went to his house first and ascertained that some members of the family had sore throats. He then went over his dairy, which was a model of cleanliness, and also the cow-sheds, the sanitary arrangements of which were perfect, and afterwards visited the marshes, where the water was obtained from a running stream. On examining the cows and calves he was unable to detect any eruption of the teats whatever. The calves were all perfectly healthy. He accordingly gave the man a certificate as to the result of his investigations, and it was published in one of the papers. That so roused the Corporation that they got their medical man to investigate the case, and they published his report, which stated that the man's milk had conveyed sore throats, and not Scarlatina, to the people he supplied in the district. This so seriously affected his business that it nearly ruined him. He (Mr. Martin) then wrote to the paper, offering the Corporation his assistance, but they took no notice of it. As far as Scarlatina went, they generally saw a redness of the skin, a sore throat, and a general fever; but he saw nothing of the kind in the man's cows, and therefore he did not think there was any similarity in the diseases in man and cows, but that Dr. Klein's assertions required greater corroboration than at present. (Hear, hear.) He did not believe in his report at all. He maintained that it was their duty to assist the scientific men at the College by all means in their power. If any case should come before his notice at any future time, he should, for the benefit of the profession and their reputation, seek the assistance of their professors to examine the case, and exonerate them from any blame that the public were likely to throw upon them. He was glad he came there that day, because the subject awakened them to further investigation. He claimed that they were really as anxious as the members of any other profession to enlighten the public as much as they possibly could to prevent diseases being communicated.

Mr. F. W. WRAGG said he should like to know whether Dr. Klein ever came across a case where the disease was communicated by any of the servants that milked the cows. It appeared to him that, if the virus from the teats would produce a disease similar to Scarlatina in the human subject, some

servant employed in handling the teats must, at one time or another, have been inoculated. To his mind, the great thing was that the constitutional disturbance in the case before them was very slight, and no symptoms were seen which were analogous to the symptoms of Scarlet Fever.

Mr. HOLLINGHAM said that the subject threw a flood of light on a case in which he was engaged only three weeks previously, where, he believed, the cow had the identical disease. There was the exact condition of the ulcerated teats and udder and bare patches on the skin. There was no alteration in the secretion or excretion, and the temperature was all right; but there was the eruption, and he was puzzled to account for it. The hair had come off, and the animal was licking the parts, as if they were irritated, and he simply gave, as they often did, a fever medicine, and recorded the complaint as some disorder of the digestive system. He went again in the course of a few days, and then found that the eruption had disappeared and the animal recovered. Two or three days previously that cow was being milked with a herd of fifty others in a large shed, and when he saw the case he regarded it as of sufficient importance to isolate it. He was continually handling the animal, and, having a small wound against one of his finger-nails, he used that finger; but he had suffered no ill effects from it. The place where the cow was was seven miles from Tunbridge Wells; there was no case of Scarlatina for miles round, and there had been no fresh purchase on the farm to his knowledge within two months. Therefore, if it was a case of the particular disease that he saw, he thought it was presumptive evidence that it was not such a highly contagious malady, even amongst cows, as it was sought to prove, and that it might arise independently of the existence of Scarlatina. (Hear, hear.) He should ascertain the names of the people in London who took the milk, and see if they had received any complaints from the people to whom they sold it. He thought that one case was interesting, viewing it from the light thrown on it that afternoon.

Professor PENBERTHY: Have you had Scarlet Fever?

Mr. HOLLINGHAM said he had it when he was a little boy. Before he arrived at the spot referred to the milk of the cow had been mixed with other milk. He was unable to say whether the cow had recently calved. The eruption had existed three or four days, and the milk had been used. He felt sure it was the identical disease, because the progress of it was exactly the same as they had heard detailed. It lasted a week or eight days. This was also a place where the highest sanitary conditions were in force.

Professor PENBERTHY: And so it was at Hendon, a medical man being appointed to examine every pan. Continuing, he said, they had now arrived at a state of affairs when they had to be emphatical.

The PRESIDENT said he could not allow the subject to pass without making one or two remarks, and he must repeat that he was not at all sorry that he suggested the subject to Mr. Penberthy. He had previously read Dr. Klein's report, and thought it to be of paramount importance to their profession and the public at large, and he was convinced in his own mind that the time had come when it must be further investigated. Just contemplate for one moment the momentous issues of the subject. Look at the tremendous milk trade of this country. It was of the greatest value to the milking interest. Here was an assertion made by a doctor that cows communicated Scarlet Fever, through the medium of milk, to the human subject, and he went further and said that by inoculation they could re-communicate it from the human subject to the cow. He must say that it was such an extraordinary issue to bring before them, that it must be set right or proved to be wrong. It was of such vital importance to the whole community that he rejoiced to think they had opened a discussion, and he particularly thanked Professor Penberthy for coming there and giving them the facts as they remained before



the public up to that time. A charge was made against them of being apathetic in investigating new diseases, and in studying the public health from a sanitary point of view, and he had no hesitation in saying that it was wholly unfounded, because he did know that at the Royal Veterinary College in Camden Town, as well as in the Agricultural Department of the Privy Council, experiments and investigations of an important character were taking place, and in an obscure disease of this kind it took a considerable time to determine upon. For Dr. Klein and others to say what they had was not favourable to scientific study, but he thought that in Dr. Klein's own statement they had a partial if not a whole contradiction to the conclusion at which he arrived. He distinctly stated that the organic symptoms, or the constitutional symptoms of the animals, as at Hendon, were totally contrary to those found in Scarlatina of the human subject. He thought they would all agree that it was almost impossible to have Scarlatina in the human subject without some rise of temperature.

Professor PENBERTHY: Never; it could not be.

Mr. MARTIN: Particularly fever.

The PRESIDENT: And here we have undoubted facts, which have never been disproved, about the animals which were supposed to communicate the disease from the dairy at Hendon to the public in London, that there was no constitutional disturbance of any character whatever. I say that that to a great extent refutes what he tries to impress the public with. It is the clearest possible proof in my opinion that the disease which he says existed in these cows, and was transmitted through milk to the people in London, who had Scarlatina, is evidence of the weakest possible character, and I cannot help thinking that an important statement such as that ought not to have been allowed to go forth to the public on such futile grounds. Even the *post-mortem* examination showed that the disease was of the mildest character. In conclusion the President impressed upon country members to make known every case of a similar character as soon as it came to their knowledge, so that one of the professors of the College might investigate it.

Mr. HOLLINGHAM asked whether there was any information which would lead them to suspect that the patches on the body were irritable.

Professor PENBERTHY, in reply, said they had no evidence of this disease in animals. As he said at the commencement, looking at it from a philosophical point of view—and they could look at it in no other—the security of society was the desideratum of human life. When that security was achieved, social status or public appreciation would follow. The bringing about of it was at their disposal very largely. He was very glad of the suggestions which had been made; they would not kill anybody, but would give them an opportunity of proving that they were not what a certain strong-headed German gentleman would have them thought of. Now that his views had appeared in public print, they were bound to meet them, and they must meet them with matter as definite, not general, as he had brought before them. The information they had had that day, they must dissect, and get the definite points. The issue of the report by Professor Axe certainly had a great effect; it could not help having it. Unfortunately, it was made late; there was no gainsaying that the *Morning Post* took it up warmly, and was bitterly opposed to anything that veterinary surgeons said. At any rate, they could do nothing at Camden Town unless assisted by the public generally, for they must have information. He was thoroughly conversant with the disease; the whole of his life had been spent more or less as one specially interested in rearing well-bred stock, and such a thing as described by Dr. Klein was a common matter to him. Singularly enough, with the issue of Dr. Power's first report, they had a cow at the College which was suffering from a disease apparently identical. Professor Axe saw it, and he said that it

appeared to him to have the identical disease of the cows at Hendon. He (the speaker) drank some of the milk, but he had had no Scarlet Fever (hear, hear). Alluding to Mr. Martin's remarks as to the absorbing powers of milk, he said that meant that milk was a suitable soil for the development of the virus. Wherever they had a contagious disease they must allow that it depended on a living thing.

Mr. LEGGE asked what was the distinguishing symptom between Scarlatina and Cow-pock in the cow.

Professor PENBERTHY said that the first symptom of Cow-pock was on a red base, which was not much raised. Then they had the hard stage, which lasted three days; then the water stage, and sometimes the pustular stage, but the latter did not often come on. In the next three days they found a scaly condition, which was raised up in Cow-pock. Proceeding, he said, there was no doubt they would be able to stamp out disease in animals by a proper distribution of hygiene. As the President had said, it was difficult to imagine a disease depending upon a germ without the production of fever. To take any notice of *post-mortem* examinations in such mild diseases as they had heard of that afternoon, was, to him, of no use.

Mr. MARTIN, in proposing a vote of thanks to Professor Penberthy for his interesting paper, spoke of the interest he had displayed in the subject, and said there was no doubt it would have a useful effect upon them, and excite them to further investigation, in order to protect them from such condemnation as they had received at the hands of Dr. Klein.

The CHAIRMAN seconded the proposition, which was carried with acclamation.

Professor PENBERTHY acknowledged the compliment, and said, that if they furnished him with information of any cases, he should be extremely glad.

Mr. HOLLINGHAM proposed a vote of thanks to the President, and said he did not regret the small attendance so much as the misfortune of those who had stayed away, thereby losing the benefit of one of the most useful discussions he had listened to during the time he had been connected with the Association.

The CHAIRMAN having replied, a most interesting and profitable meeting was brought to a close.

#### LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on Wednesday, June 8th, 1887.

*Present*:—Mr. Thos. Briggs (President), Messrs. Thos. Greaves, S. Lock, T. Hopkins, J. B. Wolstenholme, W. Dacre, W. A. Taylor, A. B. Wren, J. Ingram, A. J. Jones, all of Manchester; Messrs. W. Whittle and A. New, of Worsley; Messrs. Jas. Eltoft and R. H. McRaith, of Lancaster; J. S. Carter, Burnley; A. Munro, Altrincham; A. M. Michaelis, Stockport; R. C. Edwards, Chester; Jos. Abson, Sheffield; H. Ferguson, Warrington; Wm. Noar, Bury; the Secretary, Liverpool; and Dr. Dreschfeld, Professor of Pathology at Victoria University, Manchester.

Apologies for non-attendance were received from Professors Williams, Robertson, McCall, Walley, and Axe, Messrs. William Woods, sen., Wm. Woods, jun., of Wigan; H. Thompson, Aspatia; J. M. Marshall, Knutsford; J. S. Hurndall, London; H. Barnes, Malpas; W. W. Smart, Birkenhead; and C. W. Gillard, A.V.D., 13th Hussars, Manchester.

The minutes of the preceding meeting were then read and confirmed.

The SECRETARY proposed, seconded by Mr. W. A. TAYLOR, that Mr. Henry Sumner, M.R.C.V.S., of Liverpool, be elected a member of the Association.  
—Carried unanimously.



The SECRETARY also proposed, seconded by Mr. S. LOCK, that Mr. A. J. Jones, M.R.C.V.S., of Manchester, be elected a member of the Association.—Carried unanimously.

Mr. JAS. ELTOFT, of Lancaster, nominated for membership Mr. R. H. McRaith, M.R.C.V.S., of Lancaster.

Dr. DRESCHFELD, Professor of Pathology in the Victoria University, Manchester, gave a most interesting lecture and demonstration on Pathogenic Organisms. He briefly traced the steps which research had made, and the revolution in medical ideas which had resulted. The doctor then described the modes of examination, the various methods of culture, and the tests adopted in proving that they were pathogenic. Many specimens of these microbes were examined by the members present, as were also a large number of microscopic specimens. Amongst the naked-eye and microscopic exhibits may be mentioned the organisms peculiar to Septicæmia, Erysipelas, Pneumonia, Tuberculosis, Typhoid, Scarlatina, Cholera, Leprosy, Actinomycosis, Glanders, and Anthrax.

A very interesting and exceedingly profitable discussion followed, after which

Mr. J. HOPKINS proposed, seconded by Mr. THOS. GREAVES, that a very cordial and hearty vote of thanks be accorded to Dr. Dreschfeld for his kindness in favouring them with such a valuable lecture, which was supported by several other members present, and carried unanimously.

The usual vote of thanks to the President terminated a very successful and enjoyable meeting.

#### YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE usual summer quarterly meeting took place at the Queen's Hotel, Leeds, on the 29th July, the President, Mr. Geo. W. Carter, F.R.C.V.S., in the chair. There were also present: Messrs. J. W. Anderton, Ripton; J. M. Axe, Doncaster; Geo. Schofield, Pontefract; Lodge, Dewsbury; Scriven, Tadcaster; Deighton, Riccall; Hardie and Pickering, York; Briggs and Hanson, Halifax; F. P. Carter, Bradford; Thos. Fletcher, Sheffield; Toop, Knaresbro'; Bell, Brighouse; Beck, Castleford; Robinson, Barnsley; Chambers, Kirkheaton; Broughton and Greenhalgh, Leeds.

Messrs. Exley, M.R.C.V.S., Leeds, and Powell, a student, were visitors.

Apologies for non-attendance were received from Professors Williams and Axe; Messrs. Dray, Greaves, J. S. Carter, Bale, Danby, Whitehead, B. Smith, and Secker.

The minutes of the previous meeting were read and confirmed.

Mr. Scriven nominated Mr. J. Clarkson, Apperley Bridge; the President nominated Mr. J. Thornton, F.R.C.V.S., Thirsk.

Mr. TOOP moved, "That our representatives in the Council be requested to call the attention of the Council of the Royal College of Veterinary Surgeons to the literary effusions on Veterinary Pathology, edited by the Messrs. Gresswell, of Louth, and published in penny newspapers."

Mr. BROUGHTON seconded.

Mr. GREENHALGH moved, as an amendment, "That no further action be taken in this matter."

Mr. PICKERING seconded, and Mr. FLETCHER supported.

After some discussion,

Mr. TOOP withdrew his proposition.

Mr. A. W. BRIGGS moved, and Mr. TOOP seconded, "That a telegraphic address from this meeting be sent to Sir H. L. Simpson, Mayor of Windsor, congratulating him on his knighthood, and hoping that he may long live to be an ornament to the profession."

Carried with *éclat*.

Mr. DEIGHTON exhibited a large calculus taken from the colon of a small pony that had been subject to frequent attacks of Colic.

Mr. BRIGGS said that a black cart mare, the property of the Halifax Sanitary Contractor, received a puncture from a piece of steel wire in the off fore foot, between the sole and the frog. Six days afterwards, Tetanus supervened, and progressed rapidly for forty-eight hours, until the jaws were almost firmly fixed, Trismus and Opisthotonus being well marked. The patient was cast, and the trunks of the plantar nerves divided (simply division) above the fetlock joint. In twenty-four hours afterwards, the mare's jaws were comparatively mobile. She commenced feeding, and recovery was complete in about twelve days. Experiment proved that union of the divided nerves had taken place. The mare is now in full work—three months after the operation. Mr. Briggs strongly recommended the members to try the operation of neurotomy in cases of Tetanus arising from injuries to the foot.

Messrs. ANDERTON, SCHOFIELD, AXE, TOOP, DEIGHTON, and FLETCHER, joined in a short discussion upon the treatment of Tetanus.

Mr. AXE had seen Tetanus supervening upon a rupture of the dorsal muscles, near the spine.

Mr. BRIGGS related a very interesting case of Thrombosis. On the 29th April a black cab mare, whilst working a fare, became suddenly lame of the near hind leg, and also exhibited symptoms of abdominal pain. The leg was suspended in a manner similar to a horse's leg when affected with acute inflammatory œdema. 30th April.—The leg symptoms had disappeared, but the mare was evidently suffering from progressive Enteritis, and was treated accordingly. 1st May.—The leg symptoms had returned, and the limb was icy cold, and warmth could not be induced by constant friction, etc. The patient died about eleven p.m., and the diagnosis was Thrombosis of the external iliac artery. The *post-mortem* examination revealed complete occlusion of that vessel; also the usual appearances of Enteritis.

The morbid specimen was exhibited by Mr. Briggs, who made a few remarks as to diagnosing these cases.

A cordial vote of thanks was awarded Mr. Briggs for his kindness in relating the two interesting cases.

Mr. FLETCHER re-read a portion of his paper on "Veterinary Ethics," and the portion where he recommends a Board of Arbitration, composed of veterinary surgeons, for the settlement of disputes as to soundness, instead of resorting to costly legal tribunals, was the principal topic of discussion.

Messrs. SCHOFIELD, AXE, TOOP, and other members thought the plan might be made workable; whilst Messrs. LODGE, GREENHALGH, BRIGGS, etc., thought that people would still resort to the law.

Eventually the subject was left in abeyance, pending the opinions of other societies on the scheme.

Mr. BRIGGS moved, and Mr. AXE seconded, a vote of thanks to Mr. Fletcher.

Carried unanimously.

Professor J. Wortley Axe has kindly offered to give a lecture to the members at the October meeting.

The following is Mr. Fletcher's paper:—

#### VETERINARY ETHICS.

GENTLEMEN,—In compliance with your request, I have prepared a short paper on this subject. I have not done it with a view of laying down a law or rules of my own, but to create a discussion on the subject, and for us, as a body, to lay down some rules for our future guidance.



When I commenced this paper, I was induced to look more particularly for the meaning of the word "ethics," as I had often heard it used for matters of very opposite meaning, and it is a word that has lately come very much into fashion. I find it to mean the doctrine of morality, the science of moral duty, a system of moral principles, etc., etc. Now, gentlemen, I do not think that it was your intention, and I am sure it was not mine, that I should preach you a sermon on morality, but I must say that, as a body of educated men, which we profess to be, we ought in our lives and by our conduct show to those around us, and to the world at large, that we are not only members of an honourable profession, but that we are also honourable members of the same profession, and of society in general. Well, gentlemen, to assist me out of my difficulty, I have called to my assistance an old familiar friend or word, "etiquette," which means form of behaviour or manners, expressly or tacitly required—ceremonial code of polite life—forms of ceremony, etc., etc.—these embrace, I believe, the matter we wish to discuss, and from which we must lay down rules for our guidance as to our form of behaviour in our professional duties, and in our actions towards each other as veterinary surgeons and towards our clients—the public.

I think if I divide my subject into parts, we shall be better able to discuss it. The first part is our duty towards our clients (they are the public, of course); the second part is our duty towards one another as veterinary surgeons and professional men. Our duty towards clients is to give all necessary attention to the case entrusted to us, and to use our best abilities for the benefit of the patient as well as the client. We, gentlemen, are in a different position to the surgeon and physician; with them it is a matter of cure or relieve at any price, but with us it is cure or relieve, but do not forget the "cost" must not exceed the value of the patient. All who have been in practice a few years know the difficulty this £ s. d. job puts in our way; how often we have a very interesting case, one that we thoroughly understand, and know the different phases it may have to pass through before a cure can be effected, but the £ s. d. question stares us in the face, and we cannot go on. I believe it is almost as much on this point that a veterinary surgeon's success depends as upon his abilities to cure. I can tell our young friends that this question is much more troublesome than it used to be. Everything is "go-a-head" now, and you must not keep a lame horse occupying a stall for an indefinite time when a sound one would be earning his master something. This, I believe, is our principal duty towards our clients.

What ought to be the (etiquette) form of behaviour or manners, expressly or tacitly required of us in our actions towards each other? We should meet each other with the outstretched hand of good-fellowship, with free-masonry brotherhood, with openness and frankness, no sly looks and hanging back. But some may say, How can this be done when the man you are meeting or speaking to has (to use a familiar term) run into you—has got one of your cases on his list, and is perhaps running you down in the bargain—may be, has taken some of your contracts at half the price you have been receiving? Under such circumstances there is great difficulty in carrying out the proper professional etiquette; but instead of returning evil for evil, let it arouse you to greater activity, and bring out your latent abilities. Study more, for we have never done learning, especially in these days when science is making such rapid strides, and perhaps by your extra knowledge you may soon be able to take advantage of your adversary. I may, perhaps, be excused for saying many of our young men, when they have obtained that blessed ticket of membership, think they have learnt sufficient—all their troubles are over; but experience will tell them it is not so; they will have to keep in close contact with the science of the day. I am of opinion if there was more open-

ness and frankness we should not have so many professional troubles amongst us.

What is or ought to be our mode of procedure in cases of consultation, or, as it is more commonly called, a "a second opinion"? Second opinions are often very useful, and should, and in fact would, be more frequently adopted if only done in the right manner.

When a second opinion is asked for, and Mr. No. 2, as I will call the gentleman for brevity's sake, has been selected—and this should be left as much as possible with the client, so that there may not be the slightest suspicion of collusion—then a time should be fixed as suitable as possible for all parties, and when they meet Mr. No. 2 should hear the history of the case from Mr. No. 1, with as much additional information as he may require from the client, and then proceed to examine the case, and I think I need hardly say carefully, as his professional reputation is at stake upon the opinion he gives. Having done this, No. 1 and No. 2 should withdraw from all other persons, and then No. 2 give No. 1 his opinion with the reasons for such opinions, and should they not agree there is no reason why any unfriendly feeling should be caused by such opinion, but No. 2, who then has the lead, should tell the client what his opinion is, and, if necessary, upon what grounds he has found it, and if his friend No. 1 has really been blundering over the case there are always ways of covering it so that the client shall be none the wiser. And here I would remark—let your ethics be brought into full play in these cases—to No. 2, Don't let the position you are placed in be used for self-aggrandisement, to the injury of your brother professional; to No. 1 I would strongly advise that he thoroughly carries out the instructions of No. 2, even if it be to his prejudice, but should he find the treatment prescribed by No. 2 acting prejudicially he should at once give notice to his client, and request further advice from No. 2; it will then remain with the client to say what shall be done. Gentlemen, I am sure if this plan of ethics or etiquette was more rigidly carried out there would be less ill-feeling and more consultations.

I cannot let this subject pass without drawing your attention to the way in which these consultations are sometimes carried out, as a contrast to what I have recommended. A consultation is arranged for; Mr. No. 2 appears on the scene half an hour late—of course he has been so busy that it was impossible for him to get earlier; he at once proceeds to examine the animal; if a lame horse, to have him moved or run out, and at once pronounces judgment on the animal and on No. 1 at the same time, by telling the client the seat and the cause of the lameness, what a number of these sort of cases he has seen, and how successful his treatment has always been, and all this, without a word in private to No. 1. Can you wonder at No. 1 saying something naughty about the profession? I have known more than one case where Mr. No. 2 as soon as he could see the client alone has told him, If I had had the case at first I should have done so and so. Now, gentlemen, such like conduct is not ethics, etiquette, or fair-play, and the man that does it wants boycotting, which is as strong a punishment as I can recommend.

If consultations are carried out in the manner described in the former part of my paper—and I am pleased to think and believe it is the most general way—a consultation is a pleasure and a benefit, and leads me to ask, why should we always wait for a client to suggest another opinion? why should we not have that confidence in each other that we should be able to say, "I say, Smith, Brown, Jones, or Robinson, I should be very pleased if you could come and look at a troublesome case I have on hand and give me your opinion"? Why, gentlemen, there is not a man in this room to whom such help would not be a great boon at some time or other, and it is from members of these associations we ought to get such help; and don't you think, if we



could do so, we could at the same time talk over our fees and charges, and make them more uniform in the district or county in which we practise? If this could be done there would be no occasion for "cutting charges," "running down," and bitter incriminations. Why, gentlemen, we are not (as a body) so thick on the ground yet but that we might have this matter in our own hands; we might be, and we ought to be, better paid for many of the services we render to the public and for the medicines we supply. Gentlemen, it is not the public who cut the prices down, or, in strong language, cut our throats; it is ourselves cutting at each other and lowering the profession. I admire and am pleased to see or meet a man who rises in his profession by his abilities; he is an honour to his country and to his profession, whereas the man who makes "low charges" the standpoint of his success is an equal disgrace to both.

The next part of my subject is our mode of procedure in cases of examinations as to soundness or unsoundness. In this matter a great deal of the former part of my paper must be brought to bear. Our ethics must not be forgotten, and then if we have to meet in the county court, or any court, we need not throw shy looks at each other, or get on the opposite side of the court or street to get out of the way of the man who differs with us. There are matters connected with the soundness or unsoundness of animals where there always has been differences of opinion, and always will be. The man is not born yet who can give a positive opinion to some of the questions that arise in cases of soundness or unsoundness. I think it would not be out of place here to say, I think if veterinary surgeons were to make themselves less partisan in some of the court cases, and give their opinion with less bias in the witness-box, we should not hear such bad things said about us by the public.

It has often occurred to me whether we ought not to have a council of veterinary surgeons to whom we might recommend our clients to refer some of these disputed cases and save the trouble, vexation, uncertainty, and expense of the law, to say nothing of the public exposure of the profession by the differences of opinions. If the feeling that I say ought to exist amongst us did exist, the veterinary surgeons on both sides would readily advise their respective clients to allow the case to go before the veterinary council and be decided by their opinion.

The next part of my paper is to consider whether it is against our ethics or etiquette to work a business in connection with our profession. I think it is quite a matter of individual opinion and requirement. I do not see why a man who has entered the profession should have his abilities for other things shut up, and not be at liberty to carry on any kind of business he likes so long as he remembers his professional ethics and etiquette; the public will soon let him know if he neglects his professional duties, or whether his abilities fit him for the business he has undertaken. There is only one business that offers any difficulty in being carried on in connection with the profession, and that is "Horse-dealing," and this, although a difficulty, is not an impossibility. If a man has made up his mind to act honourably in all his works and ways with his fellow-men, he can "horse-deal"; at the same time, perhaps the less done the better, for more reasons than one.

Some say we have no business to work forges in connection with the practice; that it lowers the dignity of the profession. I will leave this, gentlemen, for you to decide. I do not see it in that light. I know we cannot live on dignity, and as it is more honourable and dignified to meet our liabilities, I think we are justified in adding a trade to our profession if necessary.

There are different opinions as to the means a veterinary surgeon should

adopt to make or extend his practice. As times go now, it will not do for a young man to put up his name or sign and sit behind it until the public find him out by accident, or from an accident; he must advertise by the distribution of cards and circulars, and, of course, these will go to clients of a brother professional, but this is quite legitimate so long as the circular is confined to the address and qualifications, "without special" attention to the moderate charges; the same will apply to newspaper advertising.

I must now thank you very much for the patient hearing you have given me.

#### LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held in the Medical Institute, Hope Street, on Friday, August 12th; the President, R. C. Edwards, Esq., in the chair.

There were present: Messrs. Greaves, Morgan, Faulkner, A. Leather, S. Locke, T. J. Davies, W. A. Taylor, T. Hopken, W. Woods, and the Secretary.

After the transaction of the preliminary business, Mr. R. S. Mitchell, Old Swan, was unanimously elected a member of the Association.

Mr. GREAVES gave notice that, in consequence of the continued poor attendances of members, he would at the next meeting move that the affairs of the Association be considered.

The PRESIDENT then called upon Mr. Greaves to read his paper on

#### OPEN JOINTS AND QUITTORS FROM A SCIENTIFIC POINT ON VIEW.

Mr. GREAVES then said—

I have chosen these subjects because we are all familiar with them; each one of us has had to treat cases, may have our own method of treatment, and by an interchange of opinion we are enabled to compare results and gain knowledge.

Those of us who have extensive practice know that many of these cases prove very tedious and intractable, requiring all the attention and knowledge acquired by experience to cope with them successfully.

#### *Open Joint*

is nearly always a result of accident; if the injury is simply a clean incision through the skin and capsular ligament, it may, if proper care and attention be paid to it, readily heal, and be attended with little or no danger; but if the incision be accompanied by bruising, or crushing of the capsular ligament and rim of the articular cartilage, or caused by a violently-twisted joint, causing intense inflammation, increased secretion of synovia, distention and bursting of the capsular ligament, then it will often be found a very formidable case to treat.

The immediate consequence of open joint is a tenderness produced in the delicate synovial membrane; owing to deficiency of synovia it is subjected to a squeezing action between hard surfaces, is crushed, and soon becomes inflamed.

I grant you we can have a joint inflamed, and all the train of evil consequences of inflammation, without the joint having been open, as, for instance, in the case of Navicular Disease and Hock Joint.

Physiologists inform us that a greater danger is to be apprehended from the admission of air into the joint, and still more recently the theory or doctrine is advanced that the mischief resulting from the admission of pure air is not to be attributed to the air simply, but to the invasion of numerous microbes into the joint along with the air, that it is to the presence of these microbes that we must ascribe all the mischief that takes place. Such being the case, it will be clear and self-evident to each of you that our great con-



cern must be the careful exclusion of the air, and with it the complete exclusion of these microbes.

At a meeting of the North of England Veterinary Medical Association, held at Newcastle-upon-Tyne a short time ago, Professor Williams introduced this subject of open joints. His remarks were characterised by his usual practical clearness; he gave us a very interesting and useful explanation how he sterilises the parts externally, and also, in some cases, internally, that is, by injecting a weak solution into the interior of the synovial cavity. To sterilise microbes externally, he saturates the wound, and the skin all about the wound, with a weak solution of corrosive sublimate. I may say here that I have never injected anything into joints—have been frightened to do so. He employs this, not as a styptic, not as a deodoriser, not as a disinfectant, nor yet as an antiseptic, but purely as a steriliser—as a destroyer of microbes.

Science has clearly and most satisfactorily demonstrated that microbes play a more important part in the healing of wounds than was ever dreamt of formerly. The expressions of miasmata, virus, effluvia, etc., which were in use twenty years ago to distinguish that unknown agency which constitutes contagion, are now proved to be referable to microbes. The doctrine of micro-organisms is a high and worthy object of study—it may be regarded as the noblest achievement of modern surgery. The first and most brilliant application of the theory of microbes to human therapeutics has been made in wounds. The admirable results obtained by Lister's method are the strongest confirmation of the truth of the theory of microbes. Since its introduction into medical practice mortality amongst the wounded and amongst surgical cases has considerably diminished. This is the essential point to which we ought never to close our eyes. Operations formerly considered impossible have been undertaken and successfully carried out; for a long while we were almost completely ignorant of the condition of existence of microbes. Disease was thought referable to miasmata, virus, effluvia, etc.—terms becoming now obsolete. It is now generally admitted that a large majority of epidemics, fevers, and other contagious diseases which affect man and animals, are caused by the introduction of certain kinds of microbes into the organism, and not to injurious gases.

It is hard to realise how fast the world is moving on; day turns into night as of old, but the sun shines each morning on an altered world, now and then a flash reveals all this. The young believe they know much more and better than their grandfathers did. We are all trying to attain to a higher knowledge, trying to arrive at faultless precision. At times we stand still to contemplate our position, we try to exercise a sound instinct. We sometimes ask ourselves "Is this all gain?" is this beautiful, captivating theory, which holds us spellbound, as it were, sound, and based on truth? Let us ask ourselves,

#### *What are Microbes?*

They are invisible micro-organisms existing in immense numbers. They seem to be part and parcel of the air, though not discernible by the naked eye. They are found also occupying fluids and solids, in the crumbling stone and in the rusty iron. The term *microbe* is a generic term, and comprises different kinds, such as bacteria, bacillus, micrococcus, and many other individual germs; they are more numerous in some localities than in others; are stronger and more vigorous in one locality than in others; in some situations they would seem more attenuated and feeble; in some localities, such as privies, cesspools, etc., microbes cannot co-exist with the gases given off from them, but it is within the knowledge of almost every veterinary surgeon, if you castrate a colt, or perform any surgical operation in the vicinity of a dissecting room or slaughterhouse, or any such-like place, it is almost certain to take bad ways. The parts take on unhealthy action, unless very great care is



taken to sterilise everything that comes near the wound; it would be well if we bear this in mind, and carefully sterilise our instruments, and everything that has to touch wounds.

The study of this subject is of vital importance in aiding us in arriving at some practical solution of what at present remains a deep and profound mystery, viz., that which produces, regulates, and controls vital phenomena; science proves this to be no conjectural hypothesis. The air teems with these micro-organisms. They are not dead, lifeless, inorganic atoms, which never created life or imparted life. We are quite satisfied life cannot emanate from inorganic stuff; life surely never comes into existence, under any circumstances whatever, unless from pre-existing life. There is something intricate and grand in all life phenomena, it has baffled the wisdom and conception of by-gone ages, and still is shrouded in the profoundest mystery. Even in these lowly-organised germs there are life phenomena superior and above mere physical or chemical forces. The scientific spirit of the age, or what some call modern advanced thought, can arrive at no other conclusion than that all life must come from pre-existing life.

So much for microbes. Professor Williams also advises the use of shellac varnish, with the object of plastering up the orifice, excluding the air and also microbes. Keep the limb at rest as much as possible. I apply corrosive sublimate powder to the wound on a small pledget of wet cotton-wool passed into the incision, and left in it. Some prescribe iodoform, but I have not witnessed any good effects from its use. I apply blister ointment to the surrounding skin; it will swell the skin and plug up the opening. I have used oil of cloves with various success. This, with the rest shoe nicely adapted, the heel neither too high nor yet too low; and when much lameness is present I am a strong advocate for slings. How often do we see a horse to all appearance doing nicely, the pain getting less, the discharge of synovia becoming less and less, when the horse is allowed his head and he lays down; in the act of getting up he gives the leg a slight twist, and in a moment is undone all the improvement which had taken two or three weeks' care to induce. If open joint continues, the articular cartilage becomes worn, cracks, caries of bone under it follows, and the case is hopeless.

#### *"Quittor."*

This is a sinus in the coronary substance of the foot, from which issues a discharge. It is often caused by a tread from the other foot, or an injury from some other cause. The lateral cartilage is more or less injured, and the discharge proceeds from diseased surface of the cartilage and tissues adjoining. When the injury is severe it is followed by a sloughing of the skin and coronary substance that has been crushed. This is generally accompanied with tumefaction of the coronet; occasionally the capsular ligament is involved in the injury, and may slough, leaving open joint. This is always attended with much pain; the horse will often hold his foot up and nurse it for days and days. I think the best method of treatment is, at first, fomentation, poultice, physic, and rest shoe; if the pain is very great, I may bleed, and give aconite. Let him have plenty of droppings under the lame foot to preclude all jarring of the lame foot on the bare stones—microbes do not emanate from the droppings of horses. Sometimes the case is protracted, the discharge continues, and will break out in another and yet another place in the coronet. I advise daily injection of a saturated solution of common sulphate of zinc, and blister ointment to the coronet, repeated in very protracted cases; and where the coronet is much tumefied, I pass into the sinus a pointed red-hot iron, say one inch deep in the sinus, and then pass in corrosive sublimate powder, a pledget of wet cotton-wool passed into the sinus, and bandage; leave it in three days. If the horse is very lame I am a strong advocate for the use of



slings. I also have the upper part of the hoof rasped quite thin to enable it to expand, and thus remove and relieve the tightness, or tension upon the periosteum and other tissues immediately below the coronet. The sterilising method of treatment should also be observed in these cases as carefully as in open joints. I must, in conclusion, apologise for not having this paper in a more perfect form ; but, in truth, I have had only little time at my command. I hold that the mind of a veterinary surgeon is like a merchant's ledger : it requires to be continually posted up to the latest date ; even the last telegram may have upset some venerable theory that has been received as infallible for ages.

The paper was well received, and a good discussion ensued.

Mr. DAVIES kindly promised to read a paper at the next meeting.

The usual votes of thanks concluded the meeting.

HY. SUMNER, *Hon. Sec.*

### SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE quarterly meeting of the Society was held on the 24th August, 1887, in the London Hotel, Edinburgh. There were present Professors Walley, Williams, Baird, and Lewis ; Messrs. Cunningham, Hutton, Spreull, Reid, Fingzies, Cassells, Fairbairn, Barclay, Storrie, Aitken, senr. and junr., Edinburgh ; Aitken, junr., Dalkeith ; Black, Moir, Reid, Leith ; McArthur, Connochie, Ayton ; Young, Boyd, Stewart, and Young, Leith.

Professor WALLEY apologised for the absence of the Secretary, who was unavoidably out of town, and who had asked him to undertake the duties for this occasion. Professor Walley had also to state that the President was very ill, and unable to attend ; consequently one of the vice-presidents would require to take the chair, which was accordingly done by Professor Lewis.

The minutes of last meeting were then read and approved of.

Professor Walley nominated six gentlemen for election as members at next meeting, and Mr. Storrie nominated Mr. Bannatyne for election at next meeting.

Letters of apology for non-attendance were read from Messrs. Thompson, Aspatria, and Cameron, Berwick.

It was unanimously agreed to allow the letter from the Royal Counties Veterinary Medical Association to lie on the table.

Mr. CUNNINGHAM introduced his motion in reference to the retirement of Professor McFadyean. He submitted it on the broad principle that, if a member of an association makes insulting remarks, is put down by the chair, then goes to a paper outside and uses insolent language, and makes an attack on another member, he should, in his opinion, be asked to retire, as being unfit to remain as a member of the Association. He recapitulated all the circumstances of the annual meeting, read Professor McFadyean's letter in the *North British Agriculturist*, drew attention to Professor McFadyean's statement at last meeting, "that what he (Professor McFadyean) had written was the truth, and he was prepared to stand by it," and to his further statement that "it was a fact that Professor Walley had been unjustly attacked by Mr. Rutherford." Whether this were so or not he (Mr. Cunningham) could honestly say that he had never made any attack upon Professor Walley in this or any other meeting. He explained the meaning of the word "farce," read his resolution, and, in asking the members to vote for that resolution, he reminded them that they had come to the parting of two ways.

Mr. BORTHWICK seconded the motion.

Professor WILLIAMS supported, and in doing so said that he considered the letter a very offensive one, and that, although strong remarks were made

at the annual meeting, both by Professor McFadyean and Mr. Rutherford, he did not think the former was warranted in writing such a letter.

Professor WALLEY, in moving a direct negative to the resolution, recapitulated the remarks he had made before in reference to the origin of this matter, and especially drew attention to the direct, unwarrantable and unprofessional attack made on himself by Mr. Rutherford. He (Professor Walley) had nothing to do with any language which might be used outside the Association, but he might direct attention to the fact that much more violent language had been used by other members of the profession in other places; and as Professor McFadyean had acted in his defence, he looked on this as a personal matter. Mr. Cunningham had stated that he "had never made any attack on Professor Walley in this or any other meeting," but he (Professor Walley) had to remind him that, if he had not attacked him in the meeting, he had made a covert attack on him in a newspaper. He thought that if there was any man in the Society who was justified in resigning on account of discourtesies and insults which had been offered him, even by officials, it was himself. He further said he would not waste the time of the meeting by prolonging his remarks, but would at once put his amendment so that the miserable business might be terminated without delay.

Professor BAIRD seconded Professor Walley's amendment.

The motion was then put; thirteen voted for and ten against.

The CHAIRMAN declared the motion carried.

Mr. CUNNINGHAM then rose to propose his second motion, with reference to the representative of the *North British Agriculturist*, but withdrew it by advice of Professor Williams.

Professor WALLEY then made the following remarks on

#### "THE CLINICAL USES OF IODINE."

He said:—

Mr. PRESIDENT AND GENTLEMEN,—Allow me in the first place to correct a mistake in the notice summoning this meeting. It is stated on the agenda that "Professor Walley will read a paper on the Uses of Iodine." This I did not offer to do, as I had no time to prepare one, but I shall have much pleasure in directing your attention to some uses of iodine which may be of value to you in your daily practice.

I have on various occasions, and in various places, directed the attention of the profession to the value of iodine in the treatment of bursal distensions. My first case of this kind occurred during my first year of practice in North Wales, and was a case in which the patella bursa of a colt was so enormously enlarged as to extend a considerable distance down the thigh. The colt had been treated for nearly a year by an empiric, and as it was a matter of "kill or cure," the owner left the case in my hands. The treatment consisted of free evacuation of the synovia, the introduction of iodine into the sac, and its application with soap liniment to the skin. I never saw the colt again, but was informed by the owner that the treatment was entirely successful.

My next trial of the *intra-bursal injection* of iodine was in a case of Thoroughpin which had resisted the curative influence of firing, blistering, setoning, aspiration, and compress; it was injected after the evacuation of the synovia, was perfectly successful, and the horse has worked *sound* for the past three years.

In the summer of last year I was shown by Mr. Barling, of Newnham, a bad case of Patella-bursal disease in a colt, upon whom I had assisted Mr. Barling, of Ross, to operate the previous year for Fistula of the Withers; the colt was useless, was, in fact, on the way to his last home—the kennels—when I saw him; firing, blistering, etc., had been practised without relief.

Intra-bursal injection of iodine was carried out—the first operation by my-



self, and subsequently, as often as circumstances demanded, by Mr. Barling—with success.

Some months ago an Irish setter-dog was placed under my care, suffering from rheumatic distension of the anterior fetlock, bursæ of each foreleg, with considerable interstitial thickening of the surrounding parts. After the application of various remedies without relief, I ordered frequent subcutaneous injections of iodine; the result was in the highest degree satisfactory.

Two days ago, in speaking of the subject with Mr. Malcolm, of Birmingham, he informed me that, remembering my remarks on the value of iodine injections in bursal diseases made at a meeting of the Midland Counties Association at Walsall, he was led to try its effects in an intractable case of open navicular bursa. A speedy cure resulted.

Some time ago I noticed an article in the VETERINARY JOURNAL by Mr. Cunningham in reference to the treatment of pre-scapular tumours in the horse. I would advise Mr. Cunningham to try irrigations of iodine in any similar case in the future. It will probably be remembered by some of the members that I some time ago directed attention to the value of deep puncture in such cases. I subsequently determined upon employing iodine irrigation, and have treated a number of cases since by this method, and in almost every instance the effects have been all I could wish.

The operation induces, usually, one of two things, viz., central suppuration and absorption after the evacuation of the pus; or, absorption without suppuration; but in one case, lately, the results were somewhat unexpected, and, at the outset, alarming.

The tumour was a very large one and very hard. Blistering and irrigation in the ordinary manner had no effect on it, and I then used a stronger preparation of iodine injected with my aspirator syringe and needle; but in performing the operation I had, on account of the excessive hardness of the tumour, to pulp a large area of it internally before I could get the injection to flow. The irrigation was followed by manifestations of great pain (a thing not usually seen), and in the course of a few days, acute phlegmonous cellulitis, extending down the leg and all over the pre-pectoral and pre-scapular region, followed; it was succeeded by sphacelus of the skin over a large area, and this again by sloughing of the whole of the substance of the tumour, leaving the surrounding muscles exposed and producing a terrific chasm. Healthy granulation went on, and the wound healed with gratifying rapidity.

The healing process was accompanied by absorption of the new tissue in the surrounding structures, and with the exception of a little depression and a moderate sized cicatrix, the part assumed its original condition, without any interference with the action of the shoulder.

I have said that the great sloughing in this case was unusual, and I could account for it only on the supposition that during the pulping process I had damaged or destroyed the artery of supply; probably, also, the fact that the horse had but recently recovered from a severe attack of *Purpura Hæmorrhagica* had some influence in the production of the sloughing.

I have for some time used iodine, either alone or with phenol, with varying success in the treatment of sinuses and fistulæ, but in a very bad case of multiple rectal fistulæ in a dog, which had resisted various methods of treatment, I injected iodine deeply into the walls of the rectum. The injection was inadvertently used much stronger than I had directed, and it was followed by excessive inflammation and sloughing, but after the healing of the wound, the disease was cured in the part operated upon, and the parts resumed their original size without in any way interfering with the action of the sphincter ani. When practical, I would advise that in treating fistulæ or sinuses, the injection should be passed into the surrounding structures rather than into the cavity itself.

The value of iodine in the treatment of Actinomycosis, Ringworm, and other specific forms of Mucositis and Dermatitis, as also of Pruritis, I have referred to previously in other articles. To its value as an injection in Blenorrhœa, Gonorrhœa, and Vaginal Catarrh I have also alluded elsewhere. In the form of inhalation it is invaluable in the treatment of Nasal Gleet and Chronic Bronchial Catarrh, and in one case it had a very powerful curative effect on the ulcers, etc., of Glanders; the discharge diminishing very materially, and the ulcers cicatrizing rapidly. I consider it far superior to iodoform, to the alleged value of which in such cases I cannot, from my experience, subscribe.

Before sitting down I will, with your permission, Mr. Chairman, briefly refer to the use of cocaine in the operation of plantar neurectomy. Having, recently, to unnerve a mare in both fore legs, I determined upon trying local anæsthetization with cocaine in lieu of general anæsthetization with chloroform. Immediately before the mare was cast, I injected, subcutaneously, a few drops of a 15 per cent. solution of cocaine hydrochlorate over the nerves at the seat of operation. The mare evinced no pain on cutting through the skin, and the paralysis of the nerves was so complete that no sensation was evidenced on compression with the forceps, or on puncturing with a pin, and while the usual reflex movements took place when each nerve was divided, there was no evidence of pain until I divided the last nerve, and this was accounted for by the fact that the anæsthetic effect of the cocaine had passed off. The wounds healed rapidly and satisfactorily.

In the short discussion which followed,

Mr. SPREULL stated that he had used with success injection of iodine, I-16, into bursæ after opening them.

A vote of thanks to the Chairman and to Professor Walley concluded the business of the meeting.

ARCH. BAIRD, *Hon. Sec.*

## **Army Veterinary Department.**

*Gazette, July 8th.*

MIDDLESEX YEOMANRY CAVALRY—DUKE OF CAMBRIDGE HUSSARS.—Veterinary Surgeon John Edward Jarvis to be Active Veterinary Surgeon.

The Commander-in-Chief in India, in despatches relative to the field operations in Burmah since the capture of Mandalay, when enumerating the special services of corps and officers, says:—"The few officers of the Veterinary Department, including Veterinary Surgeon F. G. Shaw, who could be spared for service in Burmah, have also done good and useful work."

Veterinary Surgeon (First-Class) Rayment has received the thanks of the Indian Government for his services on remount duty in Persia. The services of First-Class Veterinary Surgeon Glover have been highly praised in the reports submitted to the Government in connection with horse-breeding operations. Veterinary Surgeon Pease has passed the higher standard in Hindustani and the lower standard in Persian, and G. H. Evans the higher standard in Hindustani.

The following veterinary surgeons have embarked for a tour of service in India:—Cox, Walker (W. R.), Dundon, Taylor. The following are home on relief:—Evans (J. W.), Pringle, Mills.

The Department has subscribed to the Jubilee Imperial Institute the sum of £43 6s. 2d.



## Obituary.

THE Army Veterinary Department has to lament the loss of one of its best officers by the death of First-class Veterinary Surgeon S. R. Sartin, M.R.C.V.S., which occurred in London on September 1st, at the early age of forty-two years. Mr. Sartin was home on sick leave from India, suffering from valvular disease of the heart, and his death was rather unexpected. He had been in the army eighteen years, and bore an excellent reputation, not only for professional ability, but for moral and social qualities. He served in the Egyptian Campaign of 1882, for which he wore the medal and bronze star. A young widow is left to mourn his demise. Our deceased colleague's brother, also an officer in the Veterinary Department, died while on passage home from South Africa, after serving in the Zulu War.

The Army Veterinary Department has also to deplore the death of one of its oldest officers. Veterinary Surgeon, First-Class, Edward Simpson Grey, M.R.C.V.S., on the retired list, died on September 19th, in Edinburgh. He served the Eastern campaign of 1854-55, with the 8th Hussars, including the battles of Alma, Balaclava, Inkerman, and Tchernaya, affairs of Bulganak and McKenzie's Farm, siege and fall of Sebastopol, for which he had the Crimean medal with four clasps and the Turkish medal. He also served in Rajpootana and Central India during the Indian Mutiny, and was present at the capture of Kotah, re-occupation of Chundaree, battle of Kotah-ke-Serai, capture of Gwalior, actions of Koodye and Boordah, siege and capture of Powree, battle of Saidwaho, and action of Koonrye, for which he received the medal and clasp. He graduated in 1839.

The death is reported of F. W. Moss, M.R.C.V.S., of South Lambeth, who graduated in 1844; and also of J. R. Moir, M.R.C.V.S., of Armagh, who only graduated in July, 1886.

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## Notes and News.

THE BUFFALO-GNAT.—We are informed that Dr. Riley, entomologist to the American Department of Agriculture, will devote a large portion of his forthcoming report to the Southern buffalo-gnat, which does a great deal of damage in Louisiana, Mississippi, Arkansas, Tennessee, Missouri, Kentucky, Illinois, Indiana, and Eastern Kansas. These gnats usually appear after the first spell of warm weather in the spring, their invasion lasting from a few days to five or six weeks. They attack all domestic animals, including poultry, and all, when bitten by many of the insects, show symptoms similar to those of colic, and frequently die. The death-rate of mules, which are extensively used in the South, is higher than that of any other animal. Dr. King, after making numerous *post-mortem* examinations, has come to the conclusion that the bite has an effect similar to that of the rattlesnake. When the gnats appear animals are kept in darkened places if possible, or fires are made of substances which produce a great deal of smoke. Various remedies, external and internal, are used for animals attacked.

THE MICROBE OF WOLF-RABIES.—In a preliminary note in the *Vratch*, No. 21, 1887, p. 415, Drs. Julius Motte and N. Protopopoff, of Professor S. D. Kostüürin's laboratory, in Kharkov, state that while studying Wolf-rabies they have met with a micro-organism which seems to be closely connected with the rabic virus in wolves. The following is an outline of the experiments. A young wolf was inoculated by hypodermic injection of an emulsion of the brain of a dog which had died from spontaneous Rabies of

the furious type. Twelve days and four hours later the wolf developed symptoms of paralytic Rabies, which ended fatally in about forty hours. Half-an-hour after the animal's death, an emulsion of the wolf's brain was introduced beneath the dura mater of a rabbit by trephining. The rabbit died in three days; an emulsion of its brain was inoculated in a second rabbit, from that to a third, and so on. A fifth rabbit, and a sixth inoculated from the fifth, died about twelve hours after the operation, with all the symptoms of paralytic Rabies. On the *post-mortem* examination of the sixth rabbit, a considerable quantity of opaque fluid was found between the dura and the pia, and in the subarachnoid spaces. This fluid contained, besides a few leucocytes, an enormous number of extremely minute, short, and very motile bacilli, of a very special kind; in fact, the fluid represented a natural "pure culture" of the micro-organism. An inoculation with brain and spinal cord from that rabbit invariably produced paralytic Rabies in other rabbits, death always ensuing in about twelve hours. On *post-mortem* examination, the same microbes were found in all cases. The animals' blood also contained similar bacilli, but in far smaller numbers. A rabbit inoculated by trephining with the blood died in twenty-nine hours. Having prepared a pure culture in meat-broth, Drs. Motte and Protopopoff inoculated it either by trephining or hypodermic injection. In the former case, all the animals (four rabbits) died from paralytic Rabies in twelve hours; in the latter, in from two to six days. The same micro-organisms were detected in a young rabbit which had been inoculated by trephining with an emulsion of the brain of another wolf, which had died of spontaneous Rabies. The authors promise to publish at an early date the results of their inquiry into the morphological and biological features of the microbe which they have discovered.

VETERINARY SURGEONS IN THE RUSSIAN ARMY.—The Veterinary Department of the Russian Army, which is controlled by the Medical Department, contains 232 veterinary surgeons.

A GOOD EXAMPLE.—According to the *Vratch*, a Russian medical journal, a wealthy sheep-breeder of the Tavrichesky Government has given the Odessa Bacteriological Station 300 sheep for some experiments which it is proposed to carry out at that establishment during this autumn, in order to further test the efficacy of Pasteur's method of inoculation against Anthrax.

AN OLD CHARGER.—A New York daily says that Colonel W. O. Bolt, who commanded the 83rd Regiment Pennsylvania Volunteers in the war of the rebellion, recently buried the horse which he rode through several campaigns. The old war horse was wrapped in American flags and followed to the grave with music and an immense procession. The horse was thirty-seven years old. At the grave a Methodist clergyman made an address, and the usual honours of war were given.

ANTAGONISM BETWEEN BACTERIA.—At the thirty-third annual meeting of the Schweizerischer Aerztlicher Verein, held at Basle, Dr. C. Garré, Lecturer in the Basle University, and a leading Swiss bacteriologist, made a highly interesting communication on the antagonism existing between certain species of bacteria. His paper was based on numerous experiments which he had made, of which the following is a rough summary. He took meat peptone gelatine, and planted on its surface a culture of a certain species of microbe. When this had attained its full development, he picked out the colonies by means of a sterilised platinum lever, and then sowed micro-organisms of some other species over the surface of the remaining portion of the jelly. The retardation in the growth of the latter species, when compared with its rate of growth in a control-tube or on a control-plate, inocu-



lated at the same time as the other, indicated the degree of antagonism existing between the two species. When experimenting with bacteria which liquefy peptonised gelatine, Dr. Garré sowed the species selected in a test-tube containing meat broth; when the culture had become luxuriant he passed the contents of the tube through a clay filter in order to obtain a sterile medium. Having then solidified the latter by means of alkaline jelly, he planted a second species of microbes. Dr. Garré chiefly studied the relations existing between Fluegge's *bacillus fluorescens putidus* (a non-pathogenic bacterium growing in putrescent fluids, in the water of wells and aqueducts, etc.) on the one hand, and a number of pathogenic and non-pathogenic microbes on the other. Experimenting in the manner mentioned above, he found that there was a most marked antagonism between Fluegge's microbe and the *staphylococcus pyogenes aureus*, as well as the *bacillus typhosus* and Friedländer's *bacillus pneumoniae*. The three pathogenic micro-organisms did not grow at all when sown in a jelly which had served for three or four days as a nutrient medium for the fluorescent bacillus. The cholera bacillus and the *bacillus mycoides* continued to grow, though far more slowly than in an ordinary medium, while the *bacillus anthracis* and Finkler-Prior's rod increased and multiplied as luxuriantly as on a control-plate. Dr. Garré therefore concludes that "inoculation of the jelly with the fluorescent bacillus confers immunity on the medium as regards the pus staphylococcus, the typhoid and the pneumonia-bacillus." The antagonism is mutual only in the case of Eberth's bacillus; the fluorescent bacillus continuing to flourish in a medium previously infected by the staphylococcus or Friedländer's microbe. The explanation of the antagonism lies in the fact that microbes secrete some specific highly diffusible substances which prove poisonous to certain species of bacteria, while having no effect on others. That the antagonism not only consists merely in the crowding-out or starving-out of one species by another seems to be proved by the following experiments:—A jelly-plate is taken, and cultures of the *bacillus fluorescens* and *staphylococcus pyogenes* are inoculated alternately, in parallel rows, the distance between them varying from 3 to 15 millimètres. When the antagonistic inoculations are separated only by a short distance (3 millimètres, or thereabouts), the staphylococcus does not grow at all; but the wider the distance is, the more abundant is its growth, while the last staphylococcus culture, which has a row of its antagonist culture only on one side of it, is found to grow in an outward direction almost without restraint. Dr. Garré points out also two other forms of inter-bacterial relations. One of these is "symbiosis," or a friendly dwelling together of certain kinds of microbes; the other is "metabiosis," a term by which he designates a relationship in which one species of microbe prepares the nutrient medium for a different species, the preparation consisting either in destroying an injurious substance in the medium, or supplying the latter with some decomposition products which may serve as nutriment for the microbes that follow. Thus, the aërobes, when growing in a fluid, prepare it for anaërobes by absorbing oxygen present in the medium, as well as by preventing any further entry of that gas, by forming a superficial film over the fluid. Again, *saccharomyces mycoderma* decomposes the fruit acids in wine, and thus prepares a favourable soil for the acetic fungi, etc.

CRUELTY TO A COW.—Recently, at Stourbridge Police-Court, Jos. Cuttler, farmer, was charged with sending a cow to Hagley Stock Sale in an overstocked condition. Mr. S. Mutlow, Inspector R.S.P.C.A., gave evidence to the effect that the cow's udder was distended with milk, and in a hot and painful condition. Mr. James Blakeway, veterinary surgeon, gave evidence as to the great pain caused by overstocking cows, and said that many cases of diseased udders were caused in this way. Defendant was ordered to pay

costs amounting to 19s. 6d. The magistrates said this was the first case of the kind brought before them, and in future they should impose a fine.

**SWINE FEVER AND HOG-CHOLERA.**—At a recent meeting in the United States, Dr. Salmon showed that in the study of Hog-cholera, so called, investigators had been misled by the fact that there have been two distinct diseases known under that name, and the hogs examined sometimes had one, sometimes the other, and sometimes both at once. The true Hog-cholera is caused by a bacterium—*i.e.*, a staff-shaped microbe—and in a general way may be said to attack the bowels chiefly. The other disease Dr. Salmon calls Swine-plague, and attacks chiefly the lungs. The germ is a micrococcus or oval microbe. Both of these germs have been cultivated, and the distinction in their effects noted in various ways. That two contagious diseases should exist at the same time in the same animal is somewhat remarkable. The practical point of Dr. Salmon's paper is that lime will kill the Hog-cholera germ. This is very important, since this germ multiplies in garbage, in stagnant water, and even in good drinking-water and ordinary tilled soils. Lime applied to land at the rate of fifty bushels per acre—an amount often used for agricultural purposes—is found to destroy all the germs to the depth of six inches. The same proportions of lime will destroy the contagion in old manure heaps, which is a chosen home of this infection.

**THE CRUEL PLANT.**—Attention has lately been called to a plant which was brought from Buenos Ayres to New Zealand a few years ago, and which is known to botanists as *physianthus auricomus*. It is a beautiful climbing plant, and it has the peculiar property of catching butterflies and other insects, on which account it was named the Cruel Plant. It has been thus described:—"The anthers are so placed that their spreading cells form a series of notches in a ring around the pistil. The insect, in putting its proboscis down for the honey, must press it into one of these notches, and, in attempting to withdraw it, the end is sure to get caught in a notch, boot-jack fashion, as it were, and the more the insect pulls, the more its trunk is drawn towards the point of the notch. Thus caught, the insects slowly starve to death. So effectually does it thus catch butterflies, that it has been suggested that lines of it planted around cabbage fields might be used to lessen the numbers of the white butterfly, the caterpillar of which (the "cabbage worm") is so destructive to the cabbage crop. That insects are certainly caught by it in great numbers is evident. On a single plant the past season, covering a space of thirty square feet, ninety butterflies, besides many other insects, were trapped. The insect-catching plant has never been claimed by even the most pronounced Darwinian to eat the insects, although in my opinion it has just as much claim to be called insectivorous as the Carolina fly-trap, the pitcher-plant, or any other plant said to feed on insects." It is to be tried as a means of killing the codlin moth and other insects injurious to trees and plants generally in Australia.

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## Correspondence.

## CRUELTY TO ANIMALS.

SIR,—When a man has contributed in every way possible to a cause the major part of his lifetime, it can scarce be said, with any degree of fairness, that he is prejudiced against it. It is “hard lines,” especially when such calumnies are promulgated by those whose main interest in the matter is pecuniary, but *Mens sibi conscia recti* consoles us, aided by the reflection that the best of us are liable to misrepresentation.

The nature of our occupation should lead us to befriend the suffering brute, and the advocacy of cruelty, even in a minor degree, operates to a man's prejudice; but these should not lead us to perpetration of injustice by giving support, by evidence or otherwise, to cases that are not true. That the S.P.C.A. is worthy of individual and collective professional support is a matter that all must concede; that this support must be extended so far as making our evidence elastic, and by being untrue to our convictions, I venture to think is carrying sentiment—much of it mock—too far, and is a doctrine to which I, for one, shall not subscribe.

My mode of argument is by illustration. Many cases that have been stopped by the inspector have been brought to me for examination. I must say, that most of them have been unfit for work, and the owners of these have been plainly told so, and I have refused to have anything to do with them; on the other hand, others are very trivial, some even paltry, and where, unless the evidence was very elastic, no conviction could, or ought to be obtained. My idea is, that in these last it is the duty of a professional man to appear, whether odium is thrown on him or not, and I am singular, or perhaps foolish enough to follow this out.

If it be *infra dig.* to endeavour to avert an injustice, it cannot tend to elevate our status by playing the purveyor or jackal for the inspector; perhaps the pecuniary advantage attendant on such a course is a solatium. At this point there are two questions that occur to me that I have never heard answered, and yet they are matter of common rumour. Does the payment of the professional fee depend on a conviction? It is said that it is a case of “no conviction, no pay.” Does the certificate of such as are employed by the society, and on whose evidence they *can depend*, exonerate a man working a doubtful animal, whether the same be fit or not? I have heard the remark, “Oh, Mr. ———’s certificate will make you right, he’s their man.” If this be the case—mark, I am not saying it is; I ask the question—if true, it is a gross insult on the part of the society to the profession at large.

I have spoken of “elastic evidence,” I am not intending to say that there is deliberate false statements, but even with the latitude allowed skilled witnesses, the evidence can scarce be denied as being in some instances “over” the truth. The unanimity with which they “go” for a conviction is refreshing. On this point a case in the next town gives an illustration.

A man was summoned for a horse with a sore back. The inspector, when he detained it, took it to the police station, and it was seen by a superior official. It must be noted that the animal had Stringhalt. This peculiarity in action led the policeman to imagine that it was incapable, and he led the owner to suppose that he would get it destroyed. Its value as a work-horse being considerable, the animal was sent to me for examination. “Unfit from sore back; but Stringhalt not interfering with it for slow work,” was the certificate.

When before the bench, the sore back was admitted, and at the instigation of the police official, the case was adjourned to allow of veterinary evidence for the prosecution. When re-heard this individual stated that the back was *very, very sore*, which had been admitted, and that the horse *was lame and*

*unfit for work.* Asked the nature of the lameness: "It was Stringhalt." Further asked if Stringhalt horses were not workable: "*They were, except this case.*" The animus was too plain for any except the unjustly prejudiced to accept, and the case was dismissed, *except for the sore back.* This is only one illustration of "going" for a conviction. It is such statements as these that give rise to the saying that a "vet.'s" evidence can be "got"—any road is insinuated—"for his fee."

My fees in such matters as these are few and far between, as it is almost always that those summoned belong to the needy and hard-working class, who have a struggle to make a living.

It is a stinging reflection on us that one of the body corporate, capable of giving such evidence as I have quoted, is taken from town to town to support the society; and in some of these towns there are local vets., men of honour and talent.

To show how far a beginning in an improper course may lead, just another case, and one more strictly professional than the previous.

A horse belonging to a cartman here had a serious enlargement in front of the knee, so large as to slightly interfere with the gait, but indolent and cool, rather than sensitive. A stimulant liniment was applied and exercise advised. On the second or third day the horse was stopped by the inspector. The owner had put him in a rolley weighing 10 cwt., and 15 cwt. of a load behind him, on a level road. The animal was taken out and brought to me, and as the enlargement was increased in size, especially at the antero-inferior part, and the skin thinned, I opened it. The contents, except for the blood tinge from the cut skin, was perfectly clear serum. Although the evidence of the prosecution stated that "the limb was swollen from the shoulder to the foot," this could have been disproved by fifty witnesses, and I distinctly deny it. It is not however to the merits or demerits of the case that I call your attention, but to the professional examination of the V.S. for the society. I should have thought that in an examination of that kind, the animal should have been moved about; but superior powers of thought must be generated by earlier study in the solitude of a "swaler's" office.

The horse was turned round in the yard, I believe, but it was for the purpose of *passing a probe or needle a considerable distance through the incision made by me.* This I maintain was *entirely unnecessary, and constituted an act of cruelty much greater in degree* than that committed by the owner; and that opened the joint—an action most unprofessional, and if I can persuade my client he will sue him for damage inflicted. When I told the inspector, he said, "I did not see him;" and when I affirmed that there were witnesses who had, he said, "I was talking to the police inspector." The fact of it is if he knew about it, he did not wish to commit himself.

With regard to the load behind the horse, although the man exceeded his instructions in working him at all, the weight was not so great as compared with the animal's capabilities. On the road in question he could take a rolley 25 to 30 cwt. and from 2 tons to 50 cwt.

Before leaving the subject I would ask your readers whether they do not think that gross acts of cruelty are too common *inside* the profession; some of these are not intentional, but for want of operative skill or nerve, and if I had my way I would have every student pass at his final an examination in operative veterinary surgery.

W. Cox, M.R.C.V.S.L.

Newcastle.

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SIR,—I have often noticed with pain the suffering endured by horses attached to heavy-laden vans in their endeavours to draw their loads up steep inclines in roads paved with wood, or some substance which becomes very slippery in wet weather, and it is strange that so little is done to remedy



this state of things, and provide what is so necessary—a foothold for the horses.

This could be done, I think, by adopting the following plan, *i.e.*, to construct at the upside of the roadway, wherever there is an incline, a causeway the width of an ordinary vehicle, paved in the centre with small rough stone blocks, and at the sides with long smooth slabs, thus, while no opposition is offered to the wheels, a foothold is afforded to the horses.

Only heavy-laden vehicles need use this causeway, others could run on the ordinary pavement of wood, asphalt, granite, etc.

This plan is in operation on some of the bridges across the Thames in London, and if there, why not in other places where it is more needed?

I trust that any who see this, and can use their influence for securing the adoption of this plan will. "HUMIMATIS."

### "EXPERIMENTAL THERAPEUTICS."

SIR,—These lines are penned solely because Mr. J. Dowling Allman, Associate of the Pharmaceutical Society (Lond.), writes (though why he does I don't know, unless he considers us very backward) in your issue for June, "I say to practitioners, especially to the young *school*, Go in for every new drug that crops up, make yourself fully acquainted with its action." As I desire here to be personal, if you will allow me, sir, I must quote other passages of Mr. Allman's article. This gentleman says (we may miss his meaning), "Anything approaching personality in the matter of discussion, especially in SCIENCE, I have a very strong objection to." The word science, Mr. Allman italicises; and, later on, says, "Regarding Mr. Smith's intravenous experiments with such toxic drugs as carbolic acid, iodine, etc., I fail to see the *cui bono* of his experiments."

These remarks of Mr. Allman being distinctly personal (are they not?), we see that he considers the experiments and conclusions of Mr. Smith beyond and outside the boundaries of science. Now, without quoting Mr. Allman *seriatim*, as I should if I had the leisure, may I, as a veterinarian who is almost daily in contact with some of three or four fatal bacterial diseases, be allowed to assure Mr. Allman (I do not presume to assure veterinary practitioners, especially those of the "young school," who of all others Mr. Allman kindly thinks require his fostering advice), that some—in fact many—people who are not associates of, much less members of, the Pharmaceutical Society (Lond.), do see the *cui bono* of these experiments, etc., and are very grateful for them and for the fulness of detail with which their record is rendered.

Self-reliant practitioners capable of judging of, and of interpreting, the effects of drugs and of other therapeutic agents, must endorse Mr. Smith's dictum ("that too many drugs are used in veterinary practice, and that for all practical purposes the number might be curtailed,") which has startled his pharmacist critic.

Mr. Allman speaks of "the most advanced clinicians and therapists," and, further on, of "new drugs commended by great men."

The student and the younger practitioner of the "young school," while, as yet, through inexperience, inclined to allow others to think for them, are in some danger—not very great, perhaps—of being induced to believe that "the most advanced clinicians," etc., ought to and do use large numbers of drugs. Few do so. Mr. Allman quotes Mr. Smith as not "believing in aconite as a therapeutic agent" (in herbivorous animals is, I presume, understood). Mr. A. says, "Judging from the continuous and excellent results obtained from its use in the hands of practical and experienced clinicians, I still commend aconite tincture as one of our most important drugs in the treatment of nearly all inflammatory diseases." Now, we know that hundreds of cases of

inflammation of all parts and organs of the animal frame have recovered after the exhibition of aconite; and that a far greater number of hundreds of cases of "inflammation" have assumed the condition of resolution without the assistance of drugs in any form. I myself see and navigate one or two cases of inflammatory diseases, of one sort or another daily, and the recoveries are without aconite, and I know that the same cases (in herbivora, at any rate) would recover with aconite, though neither more nor less pleasantly nor quickly than without it, in the doses usually exhibited by veterinarians. Years ago it was my daily duty to use aconite at the prescription of practitioners, one an examiner of the R.C.V.S., another of the Highland and Agricultural Society of Scotland, both since Principals of colleges, and it was my lot to use it in the practice of a gentleman, probably too young at that time to be called an "eminent or advanced clinician," though he had, to quote Mr. Allman once more, "the responsibility of a large mixed practice on his hands, where the various maladies that arise in a large mixed practice," etc., etc. He incurred very large drug bills, but I do not know, nor even think, that I ever saw aconite of itself once ameliorate a symptom. (He did not use it in canine practice.) The preparations we used were Fleming's tincture, and the tincture of the British Pharmacopœia. As an example of the scientific genius of some modern curers and believers in drugs (simple men!), at whom the old saying, *Post hoc ergo propter hoc*, ought to be lovingly flung once a month, may I remind your readers of Dr. Leone Levi's (of Pisa, was he not?) announcement of his "cure" of Glanders in the horse, by the injection of some agent (iodine, wasn't it?) into the windpipe? Portions of the medical press, and the lay press generally, did, unscientifically and gapingly, look on this assertion as a triumph of the mediciners. Did Dr. Leone Levi labour under the complaisant credulity that for ages has hindered, leads, and always will lead unscientific, easily-satisfied, superficial clinicians to deceive themselves? Why did he not ask himself if he were in the presence of Glanders, or of some similar disease? Could this therapist never have heard of Strangles, a fever in which spontaneous recoveries often average ninety-eight per cent.? Is your space wasted when it is mentioned that a medical man in South Africa, having discovered a plant in use by a Kaffir tribe as a specific, in what he hesitates not to call equine Glanders, is recommending it to his profession as a germ-destroyer!!!

We have among drugs, old and new, very few indeed worth the name of specifics, few of more than the slightest and even imaginary value at all in the inflammatory affections referred to by Mr. Allman's (he says scientific, and not personal) critique of Mr. Smith's doings; but this does not justify, I venture to think, Mr. Allman's practitioner of the young school to hurriedly do as that gentleman appears to advise, "to go in for every new drug that crops up," though the ordinary employer of such an experimental practitioner has not so much to fear as he might at first sight imagine he has, for purely herbivorous animals are tolerant of very large quantities of drugs, except of alkaloids and one or two others.

Our profession and the whole world and his wife will probably always be just as thankful to Mr. Allman as to any one else who will publish, as Mr. Smith has done, the results of original experiments. It is almost certain that we are anxious to regard and able to utilise experiments on animals and therapeutics by whomsoever originated or carried out; but practising and practical veterinarians are hardly the men to imitate and appreciate Mr. Allman's preference for the *mere opinion* of his "most advanced clinicians, therapeutists, and great men." Mr. Allman seems to claim merit because he commends, to our benighted profession, aconite and other drugs, "in CONSEQUENCE OF THE RESULTS OBTAINED in the hands of practical experienced



clinicians." To us the merit of Mr. Smith's experiments is greater than the mere opinions of Mr. Allman's clinicians. We prefer one fact, and to be allowed our own interpretation of it, to fifty opinions, even if accompanied by the interpretation, advice, and proffered guidance of associates of the Pharmaceutical Society.

JOHN CAMMACK, M.R.C.V.S.

Kimberley, South Africa.

#### VETERINARY EDUCATION AND EXAMINATIONS.

SIR,—Mr. Greaves has again brought forward the subject of the examination of, and methods of educating the veterinary student—a subject on which he has written much, and no doubt studied deeply; he therefore has every claim to be regarded as a specialist in the matter, and in his own language, like other specialists he has his crotchets.

The present Examining Board seems remarkable no less for the manner in which it troubles students at the final examination, than for the marked ease with which it allows men to pass the A examination. Nearly thirty-three per cent. take honours in the latter examination, while in the final about one per cent. only do so. During the early part of the Board's existence the A examination was a mere farce. A fair knowledge of chemistry enabled a student to pass his *materia medica* as well as his chemistry, for the two subjects are closely allied. The botany table gave no trouble at all. After reading hard for nine months I was not asked a single question that the most elementary reading would not have done for. And after numerous inquiries I found this was the case generally. In 1881 vegetable histology was a subject that many students worked hard at—in fact, every man who was not well up funk'd the botany table. There was no scamping it. Chemistry received equal attention; as a result *materia medica* came easy.

Having thus had a taste of work in the first year, men were stimulated to work in a thorough manner for their second and third examinations. As a student works in the first year, so will he work in the second and third. Scamp the A examination, and the B and C will receive a similar fate. Down to 1885 chemistry was the one bugbear of the A examination. A knowledge of structural and developmental botany enables the student to understand and remember the histology and development of the animal body with greater ease than if he commenced the study of the latter without knowing the former. Botany has thus an educational value apart from its veterinary aspect. We are inclined to look to the latter alone.

Retain specialist examiners in chemistry, botany, and physiology, and make the A and B examinations more stringent, and there will be less dissatisfaction with the C examination. The examiners in the latter are doing their work fairly and well. And I will here add my testimony to that of "Veritas" as to the fairness of Mr. Robinson as an examiner. Formerly many students remained in Class A for years, but this, I believe, is now rare, and no particular hitch occurs until the student goes up for his diploma. Mr. Greaves' remarks as to specialists and the anomalies of examinations are almost too absurd to notice. He is anything but complimentary when he says: "That *any dozen* successful students, if examined again a month after, one-half of them would fail." If this is true, then the examiners are passing far too many, or else they know nothing of their work. That they do, however, is I think proved.

Students judge one another, and their decision is usually in accord with that of the examiners. When not so, the latter have often given their verdict in the student's favour.

As usual, Mr. Greaves finishes his letter by giving some glaring error or other committed by an examiner. But, unfortunately, the case mentioned

cuts in a manner not intended. If asked where to send a man in order that he might guard himself from committing the error mentioned, I would say go to the Royal Veterinary College. No student should ever commit any of the errors which Mr. Greaves has mentioned from time to time after three years' residence at college. If he does, then pupilage would not have saved him. If Mr. Greaves had inquired into the antecedents of this very intelligent student, he would probably have learned that he was rarely seen at college in the afternoons, and between lectures was generally in the waiting-room. At lectures he occupied the back seat, and rarely attended them if he could get any one to call his name. He would perhaps frequently boast of having *seen practice*, and was always the first to find fault with the different professors. He made big mistakes daily at college, and naturally would make them before the examiners. Yet this is the type of student Mr. Greaves discusses at such length. Is he worth talking about? Does Mr. Greaves think he could teach him? I am afraid he would fail. Over such student the qualifications of both examiners and teachers are questioned, and the poor fellow is said not to have had opportunities.

Pupilage is valuable if the student, or pupil, regards it at its proper value. But when he makes it do duty for work at college, pupilage has done him infinite harm.

Mr. Greaves says:—"Remembering that youth is the special period in life when habits are formed, he should have every possible opportunity given him to work amongst sick and lame horses for two or three years: have the why and the wherefore constantly explained to him before going to college." Granted. But the pupils who would work and learn anything at all are the very men who at college are the working students, and for whom compulsory pupilage is not necessary. As students they are the backbone of the college, and as practitioners they will be the backbone of the profession.

To have compulsory pupilage, in order to attempt to benefit a class of students that won't work at college, is to do a great injustice to those who will, and will be the means of keeping many good men out of the profession.

I have become prolix, and will conclude by saying that Mr. Greaves' system of educating and examining students is one, I think, likely to foster a system of "stable" medicine, rather than of imparting a scientific tone to veterinary education.

F. T. HARVEY.

St. Columb.

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### Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from W. G. R. A. Cox, Newcastle-on-Tyne; J. A. Nunn, A.V.D., Natal; C. Sheather, London; H. Sumner, Liverpool; R. W. Burke, A.V.D., Jubbulpore, India; J. Cammack, Kimberley, South Africa; J. Blake-way, Stourbridge; J. E. Jarvis, London; F. T. Harvey, St. Colomb; E. A. Hollingham, Tunbridge Wells; "Humimatis"; W. Young, London; J. T. King, Bournemouth; W. Broughton, Leeds; A. Baird, Edinburgh; J. Hunter, Skene.

BOOKS AND PAMPHLETS: *Proces Verbal de l'Academie Royale de Médecine*; *Bulletin et Memoires de la Société Centrale de Médecine Vétérinaire*; *J. Struska, Anleitung zu den Anatomischen Präparir-Uebungen*.

JOURNALS, ETC.: *Journal of National Agricultural Society of Victoria*; *Mark Lane Express*; *Recueil de Méd. Vétérinaire*; *Annales de Méd. Vétérinaire*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Oesterreichische Zeitschrift für Wissenschaftliche Veterinärkunde*; *Thierarzt*; *Hufschmied*; *Echo Vétérinaire*; *Révue Vétérinaire*; *Lancet*; *British Medical Journal*; *Live Stock Journal*; *Edinburgh Medical Journal*; *American Veterinary Review*; *American Live Stock Journal*; *London Medical Record*.

NEWSPAPERS: *Stourbridge County Express*; *Yorkshire Post*; *Manchester Evening Mail*; *Morning Post*.



# THE VETERINARY JOURNAL

AND

## Annals of Comparative Pathology.

NOVEMBER, 1887.

### THE CHEMISTRY OF THE HOOF OF THE HORSE.

BY FRED SMITH, M.R.C.V.S., PROFESSOR ARMY VETERINARY SCHOOL,  
ALDERSHOT.

THIS is not the first time that an attempt has been made to analyse the horse's hoof.\* I have gone over some old ground for personal satisfaction, and have added something new respecting the evaporation from horn and the power which the wall possesses of absorbing certain fluids.

A perfectly healthy and fresh foot was submitted to analysis (the operation was repeated twice to ensure accuracy); it gave the following composition :—

#### ANALYSIS OF HORN.

##### *Wall.*

Water .....	20·00	19·87
Organic matter .....	79·55	79·66
Salts .....	·45	·47
	<u>100·00</u>	<u>100·00</u>

\* In an article published in the *Veterinarian* for May, 1871, on "The Anatomy and Physiology of the Horse's Foot," the following analysis made by Professor Clement, of Alfort, is quoted by the author, Mr. (now Dr.) George Fleming.

	<i>Wall.</i>	<i>Sole.</i>	<i>Frog.</i>
Water .....	16·12	36·00	42·00
Fatty matter .....	·95	·25	·50
Matter soluble in water .....	1·04	1·50	1·50
Insoluble salts .....	·26	·25	·22
Animal matter .....	81·63	62·00	55·78
	<u>100·00</u>	<u>100·00</u>	<u>100·00</u>

*Sole.*

Water .....	34·77	29·62
Organic matter .....	64·92	70·04
Salts .....	·31	·34
	<hr/>	<hr/>
	100·00.	100·00
	<hr/>	<hr/>

*Frog.*

Water .....	45·27	35·12
Organic matter .....	54·13	64·27
Salts .....	·60	·61
	<hr/>	<hr/>
	100·00	100·00
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As we might expect, the largest amount of water is found in the frog, and the least in the wall. There is a very singular feature with regard to the water.

Those engaged in carrying out delicate chemical investigation know well how exceedingly difficult it is to weigh substances accurately, so as to get their exact weight either before or after drying, the explanation being that most substances absorb water so readily that the moisture in the air of the laboratory, or the case of the balance, is greedily seized upon by them, and the weight alters at once; they become, in fact, very much heavier, and results calculated from this would be most misleading, unless the operation be repeated several times to ensure accuracy. Now, strange to say, with hoof the matter is quite reversed; instead of gaining weight while being weighed *it loses it*, and so rapidly that every second or so *it is lighter* than it was before. In other words, the evaporation from horn is exceedingly rapid, surprisingly so, and to obtain correct results perfectly fresh horn must be used and the weight ascertained in a few seconds. This explanation will account for the slight differences observable between my two analyses.

By a simple experiment it is easy to ascertain at what rate the moisture from horn evaporates. I took two pieces of the wall, A and B, and weighed them carefully. They were then put aside; twenty-four hours afterwards they were weighed again; A had lost 2·452 per cent. of its weight, and B had lost 1·92 per cent. In five days from the first weighing A had lost 4·71 per cent., and B 4·36 per cent. of its original weight. This is an enormous decrease in weight for such a short time. Practically we recognise this rapid evaporation from horn; we see it in dry brittle feet, and we see it in those hoofs we try to keep as specimens, which we know rapidly shrink from loss of water and became very dry and brittle.



But this fact has its practical aspect, for we can easily imagine the evaporation which occurs from a wall that has been rasped and the fibres torn across, and clinically we recognise that this highly objectionable practice is a common cause of brittle feet.

If perfectly fresh horn be placed in a bottle fitted with an air-tight stopper we then find that it loses but little moisture, and that which is evaporated condenses on the sides of the bottle in the form of beads; if the horn is left long in this condition it becomes covered with a fungus. This is particularly noticeable with the frog.

It will be observed that the amount of water in my two analyses do not quite agree with each other, nor with that made by Professor Clement; this is explained by the extreme difficulty experienced in preventing evaporation during weighing.

The organic matter in horn is large; it is largest in the wall and least in the frog. This organic matter is extremely difficult to destroy by fire, it takes several hours of intense heat to get rid of it; on heat being first applied the horn swells and liquefies, bubbles of gas break through the swollen liquid surface, and then come out in streams. This gas is inflammable and burns with a peach-coloured flame, I therefore regard it as cyanogen; it is surprising the large amount of this gas which a small amount of horn will give off, and I have wondered whether this could be turned to any economic advantage?

The organic matter of horn is principally made up of a substance known to chemists as Keratin; it is a body possessing an inconstant composition, and is therefore considered likely to be a mixture of several substances; it is converted by the action of dilute sulphuric acid, among other bodies, into leucine and tyrosine, and is therefore an albuminous substance allied closely, perhaps, to elasticin. Considering the elastic nature of the horse's foot this appears most likely; in fact, at one time I was inclined to regard the foot as consisting of elasticin and not keratin, but elasticin yields no tyrosine, whereas this latter substance is readily obtained from horn. Keratin contains a large amount of sulphur; the fetor from thrush and canker is thus accounted for, the sulphur uniting with hydrogen, and forming sulphuretted hydrogen.

Horn boiled in hydrochloric acid turns the acid of a violet colour, and is partly dissolved; boiled with caustic potash, it is gelatinised; boiled with water or acetic acid, it is not affected; boiled with nitric acid it is dissolved, and the acid turned of a yellow colour; boiled with strong sulphuric acid it appears for a minute or so unaffected, when suddenly a hissing sound is heard, and dense white fumes of probably a mixture of gases are given off in *torrents*; the fumes smell of sulphur, chlorine, and phosphorus,

producing a powerful odour of burned rags. The fumes condense in the vessel in which the experiment is made, and the white gas is so heavy that it may be readily caught into a vessel placed below the delivery tube. The liquid left behind is of a deep brown colour.

If a salt of lead be added to an alkaline solution of horn the mixture is shortly turned a deep brown, from the presence of sulphur. A solution of potassium ferrocyanide, added to an acid solution of horn and boiled, causes an opaque blue precipitate to be thrown down.

I am quite unable to say what the burned-rag fumes are which are given off in such abundance with boiling sulphuric acid. Not having a gas apparatus I could not submit them to analysis.

The amount of fatty substance found by Professor Clement in the wall of the foot was  $\cdot 26$  per cent., by extracting the wall with ether I obtained  $4\cdot 102$  per cent.

The crystals formed from the organic matter in horn are those of leucine and tyrosine. I have found a considerable quantity of the latter but little of the former; I have also obtained a quantity of crystals resembling cholestrine.

The inorganic matter or salts of the foot are largest in the frog and least in the sole; these salts are very difficult to obtain, owing to the intense heat required to destroy the organic matter.

*Wall.*—Percentage of ash,  $\cdot 45$  per cent.

Ash soluble in water,  $\cdot 08$  „ „

Ash soluble in acid,  $\cdot 11$  „ „

Ash insoluble (silica),  $\cdot 26$  „ „

*Sole.*—Percentage of ash,  $\cdot 31$  „ „

Soluble in water,  $\cdot 22$  „ „

Soluble in acid, *nil*.

Insoluble ash (silica),  $\cdot 09$  per cent.

*Frog.*—Percentage of ash,  $\cdot 60$  „ „

Soluble in water,  $\cdot 19$  „ „

Soluble in acid,  $\cdot 14$  „ „

Insoluble ash (silica),  $\cdot 27$  „ „

With the exception of the sole, my insoluble ash agrees very closely with that found by Clement.

In the watery solution of ash there are traces of chlorides, lime is present, sulphates very largely, and phosphoric acid is present. In the acid solution of ash, sulphates and phosphates are again present, whilst iron is comparatively large.

It was observed that, no matter what heat was employed, it was impossible to make the ash white; it remained of a faint pink colour, which was probably due to the iron it contained.



I have always been much opposed to the use of greasy applications to the feet, believing them to be useless for the purpose for which they are intended. I was anxious to see, therefore, what power horn possessed of absorbing oil and water; for this purpose two pieces of perfectly fresh wall (A and B) were carefully weighed. The one was placed in water, the other in castor oil. After soaking in their respective fluids for twenty-six days, they were removed and weighed.

A, which had been placed in water, had the horn pliable and elastic; the coronary band was white, swollen, and pulpy, just as it appears after poulticing the foot. The horn looked perfectly fresh, just as if drawn from the foot; the gain in weight was 20·36 per cent.

B, which had been placed in castor-oil, was hard, harsh, entirely devoid of elasticity, and the coronary band and laminae were shrivelled up, just as we see in a dried foot; the increase in weight was only ·234 per cent.

From this experiment we see that water will readily penetrate into the horny fibres of the foot, whilst oil has no such effect.

I repeated the above experiments with water, lanolin, and oil, leaving the wall in contact with these substances for ninety-eight days.

Horn which had been soaked in water gained in this time 18·9 per cent. in weight; that which had been soaked in lanolin gained 8·5 per cent.; and that in oil (olive) 2·2 per cent.

It is quite evident, therefore, that greasy applications to the feet for the purpose of making the horn elastic are utterly useless. Even after the long period of ninety-eight days, but a very small quantity had penetrated the wall. Lanolin, which is prepared from the natural fat in the wool of sheep, gave better results, though nearly  $10\frac{1}{2}$  per cent. less than water.

It can be easily understood, from what has been said, that horn will part with its water as readily as it takes it up; in eleven days a portion of wall had lost 23 per cent. of its weight; another portion of wall, which had been soaked in lanolin, lost in eleven days 1·4 per cent.; and a third, which had been in olive oil, only lost ·2 per cent. of its weight in the same time. The rational method of increasing the elasticity of feet would be to stand the horse in clay or apply moisture in some other way, and then retain this moisture in the fibres by covering the wall with oil to prevent evaporation.

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## INFECTIOUS GANGRENOUS MAMMITIS IN SHEEP.

READERS of the VETERINARY JOURNAL may remember that, some time ago, we gave the description of a contagious form of Mammitis in the cow, which had been investigated by M. Nocard, Professor of Surgical Pathology and Clinic at the Alfort Veterinary School. In that disease, which was essentially of a chronic nature, the lesion always remained localised in the udder, and did not appear to have any influence on the general health of the cow.

At a recent meeting of the Société Centrale de Médecine Vétérinaire, the same talented pathologist drew attention to another form of Mammitis which attacks ewes in milk, and, assuming a gangrenous character, so rapidly runs its course that death ensues in twenty-four, thirty-six, or forty-eight hours. It was only in 1885 that Nocard heard of it for the first time, when pursuing his investigations into the causes of abortion among the Nivernaise breed of cattle, the report of which we have also presented to our readers. At that time he was accompanied by a local veterinary surgeon, M. Farine, who alluded to this ovine Mammitis, known to the shepherds and farmers as "*araignée*," or "*mal de pis*," and which the veterinary surgeons were completely helpless to cure.

On his return to Alfort he looked up the literature of the subject, but found only slight reference to it. Hurtrel d'Arboval, in the 1823 edition of his work, says that, "in the ewe engorgement of the udder is generally known and described by the name of *mal de pis*, or more commonly that of *araignée*, because it is erroneously believed to be caused by the sting of an insect having that name. . . . It is an acute inflammation of the udder, capable of passing into a gangrenous state; it is not known why this troublesome termination should be more frequent in sheep than other animals." Gasparin merely mentions it, Beugnot simply reproduces d'Arboval's description, Benion does the same, but designates the disease *gangrenous erysipelas*. Zundel, in his edition of d'Arboval, speaks of gangrene as one of the possible terminations of Mammitis, but he says nothing of this particular Mammitis of ewes.

Some months subsequently (January, 1886), a letter was received from a veterinary surgeon, asking advice with regard to a similar disease prevailing among the milch ewes kept for the fabrication of Roquefort cheese. "In nearly all the flocks," he wrote, "and during the milking season, every year, there are more or less considerable losses from a kind of very intense Mammitis, which runs on rapidly to gangrene. A large proportion of those attacked succumb, and those which recover are invariably lost, so far as the production of milk is concerned.



This malady is justly considered the scourge of the cheese-producing flocks; for it is not rare to see one-tenth of their number attacked by the terrible disease. Every kind of treatment has been tried with equal non-success, and that which the shepherds find most useful in order to save the animal is to slit up the teat in different directions at the very commencement of the attack, and dress the wounds with some simple lotion. What is the nature of this malady? The majority of the veterinary surgeons of the country look upon it as a simple Mammitis caused by engorgement of milk, and blows inflicted by the milkers; but the owners refuse to believe in these pretended causes of the disease, and the majority consider it as of an anthracoid nature. This opinion, however, should be rejected, as the animals do not exhibit, either during life or after death, the symptoms or lesions of Anthrax, neither does an examination of the blood lead to the detection of bacteria. But might not this malady, nevertheless, be of a microbial nature, like that you studied with M. Mollereau? . . . . If you think it would be useful, I can send you either udders in different stages of the disease, or an affected animal, living or dead."

The malady above described seemed to be that which M. Farine had mentioned, and the same as that described by Hurtrel d'Arboval. Never having seen it, however, and being ignorant of its nature, Nocard requested that a ewe should be sent to him, alive if possible. So the matter rested until March 15th, 1886, when a milch ewe was brought to Nocard from the farm of Vincennes, and which had been ill since the previous evening. The creature was dull and depressed, but remained standing. The head was pendant and the eyes fixed; the respiration hurried, shallow, and trembling; the pulse small, the artery being hard and tense; the temperature was slightly elevated— $39.6^{\circ}$  Cent. The right udder appeared to be treble its usual volume; it was hard, tense, hot, painful on pressure, and had a reddish-violet colour, which extended outwards to the inner aspect of the thigh, behind to the vulva, in front on the abdomen, and within to the left mamma. The coloration of the skin was nearly uniform, except towards the teat, where it was deeper, and the teat, itself cold, appeared withered and limp, as if mortified. The limits of the diseased part were well defined by their deep tint, compared with the white skin around them, as if there were a patch of erysipelas.

The left udder appeared to be healthy, from its volume, temperature, and the suppleness of its tissue; and while it yielded on pressure perfectly normal milk, that from the right one gave a reddish, somewhat opalescent fluid, without clots or odour, but having a markedly acid reaction.

On the 16th the general condition was more aggravated. The ewe was lying, and neither ruminated nor ate; when raised, it could scarcely stand; the temperature was  $39.5^{\circ}$ . The gangrenous engorgement had invaded all the left mamma, which had now the same aspect as the right. The redness extended from the umbilicus to the inner and lower part of the thighs, and to the vulva and anus; it had the same characters as on the previous evening with regard to its purple and violet tints and its sharply-defined periphery, but these were now accompanied by great œdematous infiltration of the subcutaneous connective tissue and skin. When the swelling was punctured, a large quantity of reddish serum escaped. The two glands were cold, and appeared to be completely mortified; when the teats were pressed, a few drops of opaque red fluid, quite unlike milk, escaped from them.

On the 17th, the ewe was stretched out on the litter, incapable of movement; temperature  $36.2^{\circ}$ ; ears cold. The mammæ were entirely gangrenous, being black and cold, and exhaling a putrid odour; while the subcutaneous infiltration had made more progress, and extended as far as the sternum. The animal died in the evening.

*Autopsy.* Considerable infiltration of the dermis and subcutaneous connective tissue of the entire inferior region of the trunk, perineum, and lower part of the thighs, the fluid having a markedly reddish tint, but destitute of odour. The two mammæ, treble their normal size, on section had a violet tint, due to the infiltration of their connective elements with serum; the lobules of the gland were isolated, as if by a veritable hydrotomic dissection. The peritoneal cavity contained a small quantity of reddish serum. The whole of the vascular network of the intestine and mesentery appeared as a rich, dark-coloured arborisation, seemingly due to intense congestion; the mucous membrane was normal. The spleen was small, shrivelled, and black, and its tissue somewhat friable. The lungs were voluminous and engorged with blood, but there was no appreciable lesion. The cavities of the heart and all the large vessels contained black and very firm clots.

At first sight it seemed that this ewe offered a typical example of the disease Hurel d'Arboval had described as *araignée*. There was, in fact, a gangrenous inflammation of the udder with the progressive tendency noticed by all observers.

Nocard lost no time in studying the case which chance had furnished him with. From the first day he had examined the blood and milk obtained from the two glands. These fluids from the left (healthy) gland showed nothing abnormal; spread on glass in thin layers, and dried, stained, and mounted according to the classical



procedure, they offered no traces of foreign elements; sown in appropriate media, they were uncultivable. Not so with the reddish fluid extracted from the diseased (right) gland. This exhibited a prodigious quantity of an extremely small micrococcus, either singly or associated in zooglea, as if cultivated in a state of purity. The œdema serosity was equally rich in micrococci. Sown in fowl or veal broth, this diseased milk and serum, in less than twenty-four hours, gave an abundant pure culture of a micrococcus similar to that already described.

Injected into the milk ducts of a healthy ewe, five drops as a dose, the diseased milk produced the malady in all its features. Next day the gland was swollen, tense, red, and painful, though the temperature was only  $39\cdot2^{\circ}$ . In the evening (twenty-four hours after the injection) the redness had invaded the other gland, the perineum, and the inner aspect of the thighs; temperature,  $39\cdot1^{\circ}$ . On the second day, the animal was extended on the litter, unable to rise, and refusing all food; temperature,  $38\cdot6^{\circ}$ . The ears were cold, the tumefaction more extensive, redness deeper, and the œdema more intense; the mammæ were cold and mortified, the teats being flaccid and shrivelled. The ewe died forty-two hours after the inoculation, and the autopsy showed the same lesions as in the preceding case—especially the intense injection of the intestinal vessels, the smallness and friability of the spleen, and the volume and density of the clots in the heart and large vessels. From the first day the milk was red and acid, while on microscopical examination considerable quantities of micrococci, like those already mentioned, and in a state of purity, were observed. Inoculation had, therefore, exactly reproduced the malady.

On March 20th, at nine o'clock in the morning, a second ewe was inoculated, by injecting into the substance of the right mamma five drops of the fifth cultivation of the micrococcus in neutralised veal broth. In the evening the gland was the seat of gangrenous engorgement identical with that already described; temperature,  $39\cdot4^{\circ}$ . The animal died next day at half-past two in a state of collapse.

The œdema and violet coloration occupied the entire inferior surface of the trunk, inner face of the thighs, perineum, and around the anus and vulva. The right mamma yielded on pressure a reddish opaque fluid, while the milk from the left was of a faint rose tint. These two fluids contained the same kind of micrococcus as had been previously discovered, and their cultivation was equally pure and abundant. There was the same intestinal injection of vessels, and the same firm clots in the large vessels.

At ten o'clock on March 21st, a three months' old lamb was

inoculated by hypodermic injection, with four drops of the sixth cultivation. It was found dead at six o'clock next morning. Enormous reddish œdema of the whole lower surface of the body, with lesions and microscopical appearances as before.

These experiments certainly prove that the Mammitis to which the ewe from the Vincennes farm had succumbed, was caused by the micrococcus observed in the milk and œdema of the diseased organ. But was the malady really that known as *araignée*? This case was the only one which had been seen at Vincennes for more than ten years, but where *araignée* prevailed isolated cases were never witnessed. Nocard, therefore, determined to study a non-doubtful case of the *mal de pis*, more especially with regard to the biological history of the pathogenic micrococcus he had isolated.

The opportunity soon occurred. On April 26th, M. Revel, finding a ewe affected with the *mal de pis*, collected a small quantity of the already altered milk from the diseased gland, and on the same day he injected twenty drops in each mamma of an old, but healthy ewe, which he bought for the experiment. This animal he sent off express at once to Nocard. This mode of procedure appeared to be preferable to any other, as there was almost a certainty of receiving the creature alive, and in good condition for study. It arrived on the evening of the 27th, and appeared to be extremely ill; lying at the bottom of the box, it refused to get up, and when lifted on its feet it fell heavily on the litter without attempting to make a movement. It did not evidently see the food placed before it, and drank only a few drops of water. The two mammæ were considerably swollen, hot, tense, painful, of an intense purple colour, bordering sharply on the white skin around. The supernumerary mammæ were also involved in the lesion. The teats were cold and shrivelled, and dark in colour. Pressure on the gland caused the escape of a reddish, opaque, but non-grumous fluid, having no resemblance to milk.

Examined after staining, this fluid was crowded with the small micrococci Nocard had already found in that from the ewe belonging to the Vincennes flock. Sown in different solid and liquid media, it yielded cultures absolutely identical with those he had already obtained. Lastly, inoculated beneath the skin of a healthy sheep, it killed it in thirty-eight hours, the same symptoms and lesions being noted as in the other cases.

There could be no doubt, then, that the disease Nocard had studied was the *araignée* of d'Arboval, and that it prevailed among the milch ewes of Larzac as the *mal de pis*.

Nocard's observations with regard to the biology of the pathogenic microbe of this form of ovine Mammitis are of much



interest. This is one of the smallest micrococci he has yet seen, it being much less in size than each of the two grains which seem to form the microbe of Fowl-cholera. Very abundant in the milk and serum of the œdema, Nccard could not find it in the blood, the splenic pulp, or any other parenchyma. In the milk from the diseased ewes, as in the serum from the œdema, and as in the different solid or liquid cultivation media, there are micrococci isolated, associated in fours, or agglomerated in zooglea more or less voluminous; they never assume the form of chains or chapelets.

The cultivation of this micrococcus is very easy; all the known media seem to be adapted for it, provided they are neutral or alkaline. In the different broths it multiplies with prodigious rapidity; in less than twenty-four hours the fluid is turbid and almost lactescent; after forty-eight hours the bottom of the vessel is covered with a thick, white, powdery-looking layer, resulting from the accumulation of an infinite number of micrococci; and from the first day the broth, which was neutral or alkaline at the moment of sowing, becomes freely acid, though less so, nevertheless, than when it is sown with the streptococcus of the bovine Mammitis.

If care be taken to make a fresh cultivation every day, by taking as seed a drop of that of the previous day, the microbe retains almost intact its power of growth, as well as its virulence; but if the cultivation be left in the incubator without being renewed, it soon ceases to grow, and the micrococcus loses its property of reproduction. With it, as with the bovine Mammitis streptococcus, it seems as if the acidity it produces in the broth causes its death; for if, in order to prevent this acetification, a little sterilised carbonate of lime be added, the cultivation is prolonged and the microbe retains for a very long time its reproductive properties.

Sown in milk, it multiplies with great vigour; in less than twenty-four hours that fluid is coagulated *en masse*, and the coagulum has an extreme firmness, the retraction of which gradually expresses the whey in the form of a colourless and transparent fluid. The curd and whey are very acid, and contain in abundance the sown micrococci.

Saccharised broths greatly favour the development of the microbe, but acidity appears more rapidly and intensely; very quickly, too, culture is arrested and the organism dies, unless the precaution is taken of adding to the fluid a little sterilised carbonate of lime. In proportion as the cultivation proceeds the sugar diminishes in quantity, but it does not completely disappear unless the initial quantity of glucose or lactose is very small (about 1 in 100); fermentation, at first very active, rapidly languishes, but

Nocard could not say what the secondary products of this fermentation are.

The micrococcus is at the same time *aerobic* and *anaerobic*, being cultivable equally well in contact with the air as without it; while cultivations made *in vacuo* have the same characters and intensity as the other. Coagulation of milk takes place as vigorously without air as with it.

Cultivation in solid media is easy and characteristic. When inoculated by puncture into peptonised gelatine, the micrococcus develops rapidly along the track of the needle, and from the second day, at a temperature of 18° to 20° Cent., the gelatine becomes liquefied on the surface and to a variable depth. The liquefaction rapidly increases, until on the fifth day it has invaded the greater part of the gelatine, forming in the axis of the puncture a kind of inverted cone, at the apex of which the formed microbes accumulate. Throughout the liquid portion the gelatine has lost its transparency; it is opaque, slightly acid, and swarms with microbes. After eight or ten days, all the upper part of the gelatine is liquefied, the liquefaction continuing slowly in the form of a cone with a wide base.

When the surface of the gelatine is inoculated in a streak, the cultivation is marked by a wide furrow, which quickly augments in breadth rather than in depth, and in which the gelatine is also rendered fluid.

Plate cultivation also gives good results. From the second day the gelatine is studded with regularly round, whitish colonies, which develop on the surface as well as in the substance; but those on the surface increase more quickly, and more speedily bring about the liquefaction of the medium around them, producing quite a special moth-eaten appearance.

Examined by means of the microscope, the superficial colony appears as a round, brownish, homogeneous spot, surrounded by a kind of semi-transparent areola. If a tube of solidified gelatine is inoculated by puncture in an atmosphere of carbonic acid, according to Roux's method, cultivation occurs along the track of the needle without liquefaction of the gelatine.

It would therefore seem that the digesting action of the microbe can only be exerted in presence of the oxygen of the air—a circumstance which the results of plate cultivations had already foreshadowed. This powerful digestive action of the micrococcus is exerted, though in a less degree, on blood serum gelatinised by heat.

Broths solidified by gelosis are also good media for the cultivation of this micrococcus. They possess the advantage of not liquefying, and growth takes place along the course of the needle as a white, opaque streak, with festooned borders, and on the



surface in the form of a thick pellicle, which gradually spreads towards the sides of the tube. This pellicle, at first of a dull white, becomes yellow, though never markedly so.

Potato may also be employed, but the culture is never very abundant. It takes place in the form of a thin, viscid, greyish layer, spreading slowly over the surface, and the margin of which, deeply festooned, appears thicker than the centre. Here, also, the growth gradually assumes a yellow tint, though at the periphery it has always a greyish or dirty-white tint.

The results of the inoculation of the microbe of this malady in animals of different species are particularly interesting. The injection of a cubic centimetre of the virulent culture into the galactophorous sinuses of a goat, caused absolutely no disturbance to the animal's health; the milk, even, did not undergo any change. Forty-eight hours after the injection it did not contain a trace of the microbe; its sowing here was barren of result. Injection into the parenchyma of the gland, by means of the Pravaz syringe needle, gave rise to a hot, painful, and somewhat œdematous tumour, which remained localised, and terminated in resolution in twelve to fifteen days, without leaving any sign of induration. At no time did the milk secreted by the inoculated gland appear altered, and broths sown with it remained sterile. The injection of five drops of the virulent culture beneath the skin of a male goat six weeks old only produced an œdematous, hot, and painful swelling, which rapidly and completely became absorbed.

The horse, calf, pig, dog, cat, fowl, guinea-pig—young or adult, did not appear to suffer from the subcutaneous injection of large doses of the virulent cultures; only at the seat of inoculation was there a little œdema and tenderness, sometimes a small inflammatory tumour—but all disappeared very quickly. The rabbit was found to be much more susceptible to the action of the microbe. Generally there formed at the point of inoculation a hot and painful swelling, which gradually increased, limiting the function of the region, and after four to six days terminating in an abscess, the pus of which, though to appearance laudable, literally swarmed with the characteristic micrococcus. But the creature did not appear to suffer much, and continued to eat as usual.

The microbe of this disease, then, would seem to comport itself towards the rabbit as that of Fowl-cholera does with regard to the guinea-pig. Only in one instance has a rabbit succumbed four days after inoculation with five drops of virulent culture, and the autopsy offered the same lesions as were noted in the sheep which perished of *araignée*.

*Etiology.*—If it be admitted, which does not otherwise appear doubtful, that the gangrenous Mammitis of milch ewes is due

exclusively to the micrococcus just described, the appearance of the malady is explained by the penetration of that micrococcus into the excretory glands of the mammæ. But how is this penetration effected? Is it by the hand of the person who milks the ewe? Nocard thinks this is probable, but the difficulty is to prove it. He had several times smeared and daubed the teats of milch ewes with the virulent culture by means of a brush, yet the disease did not appear. But, on the contrary, the injection of a few drops of the same culture into the teats of the same ewes—the injection being made with a fine blunt cannula so as not to cause the least abrasion of the mucous membrane, caused the development of rapidly mortal Mammitis.

The important subject of etiology therefore remains to be studied.

*Treatment.*—All attempts at treatment were in vain. The most active antiseptics were injected through the teat into the diseased gland without avail: such as solution of boracic acid, 4 per cent.; sublimate, 1, 2, and 2·5 per cent.; iodine, 1 and 2 per cent.; sulphate of copper, 2, 3, and 4 per cent.; carbolic acid, 2 and 3 per cent. These injections were repeated at short intervals, and were pushed into the gland with such force as to distend all the ducts and penetrate the acini; but no good resulted.

And this may be easily explained on the following assumptions:—

If injections of boracic acid succeed in curing the contagious Mammitis of cows, it is because the microbe of that disease develops in the lumen of the excretory canals of the gland, and the fluids injected into the teat, coming readily in contact with it, can directly exert its toxic influence upon it. But in this ovine Mammitis, on the contrary, when the microbe is introduced into the galactoporous canals, it rapidly overcomes the barrier which the walls of these oppose to its progress, and penetrates to the interstitial connective tissue, where it multiplies with prodigious activity. Here the antiseptic fluid injected into the teat cannot follow it and prevent its proliferation.

The only means of saving, not the udder, but the life of the ewe, is that which the shepherds have carried into practice from time immemorial. This consists in making a crucial incision through the entire substance of the diseased gland, and extirpating in layers the sections thus made; then the wound is dressed with a saturated solution of sulphate of copper, or with an ointment composed of ten parts of finely powdered sulphate of copper to one hundred parts of vaseline. If this treatment is adopted in good time, and before the lesion has extended beyond the limits of the gland first invaded, the ewe is preserved, and it may afterwards



produce lambs and suckle them, but it can no longer be economically employed for the industrial production of milk.

M. Cagny has stated that this affection is frequent in certain flocks in the neighbourhood of Paris, where the shepherds know it as the "Cru." Benion, in his *Traité de Maladies du Mouton*, describes it, and considers it as a gangrenous erysipelas of the mammæ. In each of the flocks which Cagny had observed, the number of births is 100 to 150 annually, and every year there are from two to ten cases of the "Cru" in the flock. Death in two or three days is the rule, and not unfrequently the animal is killed on the first appearance of the disease, and its flesh sold as human food.

When, in exceptional cases, recovery takes place, there is elimination of the diseased part by gangrene and sloughing, and the very large wound quickly fills up, leaving a trifling cicatrix; but the ewe suffers so severely that its fleece is completely shed as if its body had been shaved, and it remains weak and emaciated for some months.

During the very cold winter of 1879-80, lambing took place as usual in November and December. The cases of this form of Mammitis were as numerous as before, but, exceptionally, they were all benign. In only one of the ewes seen by Cagny had there been sloughing of the udder, and the wound, larger than the hand, had cicatrised promptly, the remaining portion of the mammary vein being occluded by a clot as thick as a writing quill. Cagny fancied that during cold weather the severity of the disease is less intense.—G. F.

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## AN OUTBREAK OF ANTHRAX IN NATAL, SOUTH AFRICA.

BY S. WILTSHIRE, M.R.C.V.S., COLONIAL VETERINARY SURGEON,  
PIETERMARITZBURG, SOUTH AFRICA.

IN accordance with instructions, I proceeded to Greytown on the 13th April, 1887, to investigate an outbreak of disease amongst Mr. G. P. Botha's sheep.

After examining a sheep just brought from the flock, I gathered full particulars of the outbreak amongst the sheep to that date, and on further inquiry I learned that Mr. Botha had lost one of his pair of trap horses about the end of last November, or the beginning of December, after a journey to Maritzburg. This horse, a day or two after its return home, began to swell about the neck and breast, but, as the shoulders were slightly chafed from the harness, it was supposed to be from that cause, and the swelling was treated with

fomentations and other simple remedies. The horse, however, became worse, refused his food, and the swellings extended to the jaws, involving the throat and seriously interfering with the breathing. About twenty-four hours from the time he became ill death ensued, and on examination the swollen parts of the throat were found very black, with yellow jelly-like matter effused into the tissues. The blood was very black and thin, and flowed freely while the animal was being skinned; just then eighteen ducks of Mrs. Botha's came along and began to gobble up the blood, but were driven away, and earth was thrown over it. A few days afterwards these ducks became affected with swellings of their throats similar to the horse, and fourteen out of the eighteen died. A few days later one of the dogs belonging to the family was very giddy and ill, and its throat and head swelled, but it ultimately recovered. It was supposed to have eaten a portion of the carcase of the horse. No sanitary precautions were adopted in the way of cleansing or disinfecting the stable or premises.

Nothing unusual occurred from that time until about the 25th of March, when one flock of ewes and lambs were brought home for shearing, and, as was customary, they were put into the stable for the purpose of catching them conveniently. Exactly seven days after, the first case of this disease was observed in a ewe, from which blood was noticed to be oozing from the nostrils, and she was found to be sick; she was removed from the flock, and died about fifteen minutes afterwards.

The second flock was brought home some days after the first, and also placed in the stable for convenience, and they also began to die on the seventh day afterwards, showing precisely the same symptoms and *post-mortem* appearances as the first flock.

I understand that some died in a very few minutes after being observed to be sick: only in a few was blood seen to issue from the nostrils; and all of them had not the swelling of the throat.

I inquired particularly if any other animals on that or the neighbouring farms had shown indications of the disease, or if any human beings had become affected, and I then learnt that the rest of the animals on the farm were all well, but that the Kafirs round about had carried away the carcasses of the sheep that died, to eat, and that one man had died, and some women were sick. At some kraals cats had died, and dogs were ill with swellings in the throat like some of the sheep had, and similar to the horse. I then expressed a fear that cases would occur in other animals, and counselled the utmost precautions so as to avoid contagion, and urged care in the handling of the carcasses, and that the natives should not be allowed to carry away or eat the meat. After examining a sheep that had not long died, and inoculating a



rabbit from it, I returned to Greytown to examine the blood with the microscope, and found it swarming with Bacilli.

The *post-mortem* appearances observed, were great discolouration of the body when the skin was removed, from extravasation of the blood. This was particularly the case from the under side of the neck from the jaws down to the chest, and when it was cut into, it was of a blackish colour, with a yellow gelatinous fluid effused in places. The vessels were distended with blood, which was thin and tarry looking, the clot being very soft. In the abdomen there was some fluid; the mesenteric glands were discoloured; the liver congested; and the spleen (melt) darker than in health, and on being cut into, the contents would run out in some instances from the splenic tissue being broken down. This, however, did not occur in every case, although the spleen was always softer and darker than in healthy animals.

On opening the chest, the lungs were found much congested and discoloured in all cases; the heart also was much discoloured at the top, and soft and flabby. In front of the heart, between the two first ribs, was a large bloody tumour in each case I examined; and I understood from Mr. Botha that it was the same in all the cases.

On the following morning a native boy—an “umfaan”—was brought in to Greytown for me to see. His face was enormously swollen on the left side, and he had a large sore on the cheek. He did not complain of much pain, but had a headache. I then rode out again to continue my investigations, making another *post-mortem* on my arrival, which was not different from the one already referred to. The next day, learning that one of the sick Kafirs was worse, I went to the kraal to see them, and on nearing it, found one woman, who was affected, sitting outside on a stone, and presenting a most extraordinary appearance. Her neck and face were enormously swollen, and she could scarcely see out of her eyes. On her left cheek was a large sore, and there were other small ones here and there. She complained of headache, and said her throat was sore to the touch, but she could eat a little and walk about. Another woman was too ill to come out of her hut, and I found her looking exceedingly ill, and very thin. She had had swellings, but they had gone down; she also had a number of sores about her. Altogether her appearance led me to doubt if she would recover. A little girl, seemingly about eight years old, had a sore on the centre of her forehead, and the place had been swollen, but was gone down. In other respects she seemed well.

Later on I visited one of the flocks and found a sheep sick, with the neck and head swollen similar to the woman I had seen

in the morning. I lanced the swelling, and secured some of the exudation for examination, and I learn that the animal died soon after I left.

On my return to Greytown I reported these cases to the district surgeon for his treatment, etc.

The rabbit I inoculated during my first *post-mortem* died about seventy-two hours afterwards (third day), and presented the same appearances as the sheep that died.

The seriousness of this outbreak will be recognised when it is seen that Mr. Botha lost one goat and 429 sheep out of about 1,200, from the 31st of March to the 19th inst., on which date a cow died from the same disease, and two others were said to be ailing. Of the natives, one man had died, and eight others were affected; and, on leaving Greytown on the 19th, I heard of others being ill, but have heard no particulars yet. I called on the resident magistrate (Mr. Wheelwright) and explained to him the risk the natives incurred in eating this meat, and he immediately sent a messenger to visit the kraals in that part of the country and caution the people not to eat this meat, and tell them of the results to others. Mr. Botha also—acting on my advice—refused to allow any more of the carcasses to be taken away, and was taking steps to dispose of them by other means.

No sudden outbreak causing such a heavy loss has ever been known before in Umvoti County, and considerable anxiety was felt about its spreading. Such anxiety is only natural and reasonable under the circumstances, and the serious nature of the disease causing this mortality will, I trust, rouse the farmers—not only of Umvoti, but all other parts of the colony, too—to a sense of danger of these cases, and lead them to adopt stringent measures for the disposal of all animals dying of disease, no matter from what cause.

My advice to Mr. Botha was to remove his flocks to fresh veldt, and then to carefully collect the sheep that died, and burn them. Such a course would be infinitely more practicable than digging graves, besides having the advantage of destroying all chances of infection from the carcasses; whereas the graves would be sources of disease in the future.

To show how disease is spread, I may mention that in riding across the veldt to see one of the flocks I came across the leg of a sheep, probably carried there by a dog from a Kafir kraal not far away; doubtless similar cases had happened in all directions, thus increasing the danger.

With reference to treatment, it is manifestly impracticable to dose 800 to 1,200 sheep two or three times a day, which would be necessary to do any good, and to get them to eat anything is out of the question. Further, medicinal agents are of little value in



diseases of this kind, even when animals are in the earliest stage, especially if not aided by the most careful nursing, protection from the weather, and general good management, different to what prevails in the Colony.

For prevention, I advised removal to fresh pasturage until the veldt had been burned, subjected to the action of weather, and left unoccupied for some time.

I advised that the stable should be thoroughly cleaned and disinfected with burning sulphur while the walls and floors were still damp; that the place where the sheep had been examined should have grass and rubbish spread over it, and then burnt; and that all animals should be kept away, and not allowed to graze there.

I beg to call attention to the desirability of regulating the sale of the hides, and other products of animals known to have been affected with Anthrax.

The traffic in these things tends not only to spread disease in the locality in which it originates, but also frequently affects wool-sorters and others in England, and leads to loss of human as well as animal life.

Since my return to Pietermaritzburg, Mr. Nunn, A. V. Department, has prepared specimens from material I brought with me, and also inoculated a guinea-pig with some of the blood from the sheep—which died about 24 hours after, showing the characteristic lesions of Anthrax. Further experiments are contemplated.

Besides the losses referred to in this report, I found on a second visit that a few more sheep had died, five more natives, and six head of cattle—all cows, I think. The district surgeon rode out with me, and we saw about thirty natives, of all ages and both sexes, with sores on them, some bad, others not so. We were told that other natives were affected in the same manner. The surgeon was of opinion that many of the sores were due to handling and carrying the meat on their heads, as well as from tainted clothing, as their habits are dirty, and they don't wash their clothes or keep themselves clean, like white people.

It is interesting to note the length of time between the death of the horse and the ducks, to that when the sheep became affected; and the fact that only those sheep penned in the stable were diseased, and each flock (the flocks being kept separate) exactly seven days after they were placed in the stable. The cattle were allowed to graze over the ground where the sheep had been skinned, and the contents of the stomachs, etc., were left exposed, until precautions were taken after I had warned the people. It is a wonder the mortality was not greater.

## INOCULATION IN PLEURO-PNEUMONIA *VERSUS* "STAMPING-OUT."

BY C. CUNNINGHAM, M.R.C.V.S., SLATEFORD.

PLEURO-PNEUMONIA is a dire disease. Many a good herd has gone down before it. It has been long with us. Some years we hear or see little of it—in others, like a tidal wave, it spreads over the country. Stock-owners rue and dread its ravages. What is the remedy?

Many leading veterinary and agricultural authorities have no doubt on the matter—the cure, the only and perfect cure in their opinion is "*stamping-out*." The duty of every veterinary surgeon and inspector, according to their views, when called to herds of two, twenty, or two hundred cattle among which Pleuro-pneumonia has made its appearance, is to kill and slaughter every one, and all of those cattle that have been exposed in any way to the contagion. My plain and evident duty when called, as this year, to outbreaks among respectively, fifteen, eighteen, thirty-six, thirty-nine, fifty-six, and seventy-six head of breeding stock and dairy-cows is according to these men not to inoculate, but to kill off promptly all the two hundred and forty animals. To such a course I for one demur. I hope that day may be far distant.

"*Stamping-out*" is expensive—it costs money. About two months ago it was publicly and authoritatively stated that the local authority of one of the Western Counties of Scotland, acting on the views of the chief adviser to the Privy Council, had "stamped," and were "stamping-out." They had taken "action," they had killed every animal in every place and district, and wherever the disease had appeared ("save one where inoculation had kept the stock healthy and pure")—such were the words. They had spent £10,000, soon their expenses would reach to £12,000, and before they finished it was expected that the sum required would be £20,000. If it takes £20,000 to "stamp-out" Pleuro-pneumonia from one Scotch county, how much will be required for the clearance of all the affected cities and counties of the three kingdoms? The question is worthy of consideration.

"*Stamping-out*" may fail. If "after inoculation certain remain which may produce disease" (we have never seen them, however), it is equally plain that if from stamping-out any escape or are overlooked as bad a result will ensue. Before proceeding "to cook a hare it is necessary to catch it," and before every case of Pleuro-pneumonia can be "stamped out," it must be recognised, reported, and dealt with.

England as a country, in December last was, if we remember aright, officially scheduled as free from Pleuro-pneumonia—it was only in



Scotland that the disease existed. Yet in a border city at that time we heard of at least five outbreaks that had never been reported at all, and the county of Cumberland was shortly afterward, without contradiction in the public newspapers, proclaimed as having been the seat of the disease for the last ten years. Ireland, too, we are told is singularly free, and for many years has been free ; it is only in Dublin and its suburbs, and a few other places, where the disease has any home. The West of Scotland, too, compared so favourably. Strange that Scotch farmers should think that Irish cattle bring the disease with them, and that from Lanarkshire and Wishaw our first cases this spring came. It is easy to clear a country or district on paper—how about the reality, the hidden unreported sold-off cases ?

The Edinburgh authorities have the advantage of a veterinary adviser who thinks that Pleuro-pneumonia must be "ruthlessly stamped-out"—its market is regularly patrolled by officially-appointed inspectors. Yet last year after my district was free—from the City of Edinburgh Market came an Irish cow, and planted the disease in a stock of twenty-five dairy cows. The banks of a Highland loch in a stamping-out county is about the last place one would expect to find Pleuro—the place looked the abode of innocence and health, yet there, eight weeks ago, lay three sets of lungs, with old patches at different stages in them, beside four others healthy, plainly showing that for at least five months the disease had existed unrecognised and undiscovered. In the face of such cases as these he will be a bold man who will say that "stamping-out" will soon eradicate Pleuro. After spending £20,000, and perhaps twenty times £20,000, he will be a bold man who dare say that the disease and its seeds have gone, that every animal in the British Isles is free from its taint.

"*Stamping-out*" is cruel, bloody work. In the newspapers we read of "great slaughterings of cattle," ten here, five-and-twenty there, fifty and seventy not infrequently. The butchers come on the Thursday, and kill all day, on the Friday and Saturday the fell work is continued, and Monday sees the finish. Flayed heads, a cart-load of skins, two or three dozen hearts, and livers, and healthy lungs ; blood, bowels, offal and open graves, make the quiet stead-ing a perfect charnel-house. All this, because among the stock there have been say half a dozen cases of Pleuro-pneumonia. Three diseased perhaps, and thirty healthy cows have all shared the same fate—the cure, the only and perfect cure of the "stampers-out"—*the poleaxe*. From such scenes may the dairies and dairy-farms of this district long be preserved.

"*Stamping-out*" occasionally spreads the disease. Contradictory as this may seem, it can easily occur. A worthy man has a cow

ailing. He is not very sure what is the matter. If Pleuro be present he knows that the men with the knives and steel will soon be busy among his stock till none remain. So before reporting he quietly sends away a few calvers, or good milkers, or young fat stock, which, in several places and at different times sow the seeds of future outbreaks. *We have never yet seen a case after inoculation give rise to a fresh outbreak, but over and over again we have found long-tailed non-inoculated cows from the North of England, from the West of Scotland, and from Ireland, the plain and palpable cause of outbreaks of Pleuro-pneumonia,* in premises and on farm-steadings and among stock where the disease before, in the memory of any one, had never been known. To clean, healthy, uncontaminated places here affected subjects, not inoculated, from cow-killing "stamping-out" districts have unquestionably brought the disease. With all their vaunted "action" and ardour the stamping-out counties are long in getting quit of the disorder. In their midst and under almost their eyes the disease appears to be hidden and to exist.

We have always looked at the suppression and eradication of Pleuro-pneumonia in a quiet, plain, and practical way. The place to decide the question is not, it humbly appears to me, the study-table, or the lecture-room, or the society meeting-room—the proper place in my opinion is the byre, the cow-house, the cattle-court, or the pasture-field. There stand the cattle, twenty, forty or eighty, it may be, in number; the diseased subjects, four or half-a-dozen, are plain enough, it needs no thermometer or microscope to discover them, and a *post-mortem* or two places the matter beyond doubt. All are under the same roof or have been at pasture together, diseased and healthy freely mixed. The question stares every one, as it has often stared me, in the face: "What is to be done here? Shall we kill up and slaughter these forty or sixty really good Ayrshire or Shorthorn animals, because a few of their number are affected, or shall we inoculate?"

Taking a quiet look we see, it may be, that a few are in calf, some in full milk and thin, others in fair condition, but few, if any, really fat. As dairy or breeding animals £15 per head here would only be fair compensation to the owner—in all, for forty animals, £600. If "stamping-out" is put in force and the carcasses sent by the dozen to the dead-meat sales, £5 per head, after paying expenses, would scarcely be realised;  $£5 \times 40 = £200$ , leaving the sum of £400 to be paid by the local authority out of the rates as compensation.

Instead of calling on the local authority for such a heavy expenditure, we quietly inoculate the stock, and have every reason to be pleased with the result.

From the beginning of March to the end of May of this year, six



severe outbreaks of Pleuro-pneumonia suddenly occurred in this district, due in every instance (save one, which could not be traced) to the introduction of fresh cows, chiefly from the West of Scotland. Standing behind or surrounded by the several herds, the rival merits of stamping-out and of inoculation pressed home.

We slaughtered the diseased animals, twenty-seven in number, as from time to time they occurred—inoculating the others. We had no deaths from the operation, only one tail required complete amputation. Seventy per cent. of tails were preserved intact, and 234 animals remained healthy, thriving and well, with not a sign of Pleuro about them. Surrounded many of these herds were by cattle on every side, watched by lynx-eyed neighbours ready to pounce on any case of failure. Out at pasture not a stone's-throw from our inoculated cows we have seen herds of twenty and thirty others grazing, yet the disease did not spread. For the cases remaining with circumscribed Fleuro, which the opponents of inoculation say "remain and spread disease," we have looked, and found none. Two cases with old patches in the lung two and four months after the operation we did come across, but these cases were harmless. No new outbreak of Pleuro followed their discovery. Driving past, as we often do, inoculated cattle grazing in the fields, dropping in every now and again into cow-houses where, side by side, fresh cows are standing unharmed beside those we inoculated months ago, we ask ourselves the question: "Have we done well to keep those cattle alive; or would it have been better to have slaughtered them up?" and our voice goes up, as it has long done, unreservedly for inoculation, combined with wise measures of precaution under the Act. To slaughter up 240 cattle because twenty-seven of their number have become affected with Pleuro-pneumonia, or to go into, as we heard the other day, one owner's premises and kill 107 animals because two or three have shown signs of the disease, we simply look on as cruelty and a waste of public money. Quickly as each outbreak occurs, it can be grappled with and suppressed at a mere trifle of inconvenience and expense, and if it be considered best in the public interest to send all inoculated cattle when fit to the shambles, that object could be very easily attained. With a little more power, and for 30s. or £2 compensation per head, we would engage that every inoculated animal in this district goes straight when fit, and by "float" to the slaughter-house. Our experience, we are certain, is but a repetition of that of very many veterinary surgeons throughout the country, who have faithfully tested and tried the operation.

Inoculation rightly performed, there cannot be a doubt, is a triumph of our art. Are we to throw it to the dogs and have none

of it? It will check the worst and most severe attacks of Pleuro-pneumonia. Cattle protected by it "may be with perfect safety put into a herd where the disease is raging, and they will stand unharmed, monuments to its efficacy." Inoculated animals, after a reasonable time, do not contaminate others. Cases remaining with patches of Pleuro and spreading disease are so rare as to leave doubt of their existence. And knowing all this, are we to be called on to throw our thermometers and inoculating needles aside, and take up the poleaxe and apply it all round? For the sake of the good name of our profession, and in the name of humanity and public economy, we sincerely trust not.

When we can so easily and certainly check the spread of the disease—when our inoculated animals after a reasonable time do no harm to others, surely we might be trusted to find ways and means to do away with any other possible danger—real or imaginary. Surely veterinary surgeons and veterinary inspectors who can combat, and combat successfully, the disease itself might be trusted to see every fat inoculated dairy-cow safely by "float" into the slaughter-house; and even in the case of breeding-stock, which are kept on, to devise such safe careful preventive measures, as would make the spread of Pleuro-pneumonia an impossibility. We see no great insurmountable difficulty in the matter. To this course even the opponents of inoculation could scarcely object. By it our profession would be honoured; we would have full room for the legitimate practice of our art. The taunts now made against it would be silenced. Animal life would be saved, valuable stock preserved, and the country at large benefited. Such a course seems as infinitely preferable to the cruel and disgusting and as yet abortive proceeding—*stamping-out*. It has long been evident to us that if inoculation, as practised by Rutherford and others, had been welcomed ten years ago by the profession as its merits richly deserved, that this course might have been carried out during that time with great benefit and success. We trust it is not too late to begin it authoritatively even now.

Space forbids more than a word or two in reply to certain statements and objections recently made against the operation.

We are told that "the question of inoculation was worked out a quarter of a century ago—that the conclusions are the same now as then—that we have not advanced one step." This statement with us carries its own contradiction. Five-and-twenty years ago Pleuro-pneumonia was the bugbear of our profession, against whose ravages we were almost powerless. Many a time have we wandered through affected stock and looked with pity on the many miserable subjects of the disease, quite unable to help either the stock or the owner, and now what a pleasure it is to do away with



the disease with ease and certainty in two or three weeks, and for months and years in the same premises to find not a trace of it. That is the "conclusion" we like; pity we hadn't it "a quarter of a century ago."

It has long been dinned into our ears that "after inoculation certain remain which produce disease"—strange we have never met with them—and now we hear that "a cow with an encysted mass in her lung is harmless," but woe betide her unlucky neighbours when the capsule bursts! the imprisoned pus and tissue-débris will propagate and spread Pleuro-pneumonia. Strange doctrine, and somewhat mechanical pathology!

Given a recent outbreak:—if the plainly diseased animals are at once slaughtered—if those brought to light by the thermometer share the same fate, doesn't it follow that the number left with patches in the lung is infinitesimally small—there may, in fact, be none at all? (and that such is the case the numerous slaughterings throughout the country amply prove). If then the stock is inoculated with thoroughly good lymph, does it not equally follow that there practically is an end to the disease? Soon the successful inoculation throws its shield over the stock. They become "inoculated animals that will not take the disease." After a time "they cannot communicate it to others," and amongst them there is *probably not one* with a circumscribed patch in its lung. Are we then going to kill off such a stock as this? How can it do harm? How can such cows do the amount of harm ascribed to them? Are we to kill off 100 healthy and safely-protected animals? For the sake of destroying the needle in the haystack are we to burn all the hay? To put out the fire in the stackyard are we to burn all the stacks? Surely not in the name of common-sense.

For Rinderpest and Swine-fever, and Glanders and Rabies, or for a long-continued, thoroughly contaminated Pleuro stock, we can understand stamping-out; but for a recent outbreak among previously healthy stock, in ninety cases out of the hundred there is, in our opinion, no manner of need for it.

In speaking thus we would of course again guard ourselves against being misunderstood. We have never advocated promiscuous inoculation—that is the performance of the operation by all and sundry—and by different methods. We know that in the Colonies and on the Continent inoculation has been practised in a manner that we would never for a moment think of:—That Dr. Willems says "The blood and frothy liquid is the best inoculating material," while Rutherford abhors and will have none of it. We know that some take a nice mixture of blood, froth, and beautiful lymph to catch all the good qualities going, and put nice little transverse sutures through the skin of the tail, and consider it a

very scientific proceeding. We know that others use glycerine and lymph, and keep the mixture a couple of years, and consider it very good. That many will not acknowledge their indebtedness to Rutherford, but start on their own account, and by their "scientific departures" produce very peculiar results. From all such we would dissociate ourselves. The system we have long advocated and acted on is the good old-fashioned way which we saw Rutherford practising nine years ago. The clear sherry or "amber-coloured" lymph, freshly taken from a good subject—(in some lungs not a drop—in others abundance)—the worsted thread, the thermometer, the docking-shears when needed (and only now when needed), care, attention, and a good use of one's faculties—the best, the surest, the safest, and the most scientific method in our humble opinion yet introduced.

In leaving the subject, we may be allowed to say that we are glad at last to see many of our profession practising and testing and proving inoculation for themselves. We trust that a little further time and experience may show them more plainly the enormous expense, the great cruelty, and the almost practical inutility of "stamping-out," and the corresponding benefits of inoculation when rightly performed.

To those who think lightly of the operation, "who can do without thermometers and needles," who simply slaughter the first cases, and the disease at once obligingly disappears, we would simply say that their lot seems cast in a happier clime than ours. We hope they may never find their mistake, but if they do, then in their difficulties let them turn like myself to inoculation, let them use the thermometer well, and with it their eyes and ears, and if they do their duty to the operation it will not belie them. Some outbreaks long ago we got quit of by simple prompt slaughter of the first cases, and in far many more we as miserably failed. Our experience without inoculation was occasional success and frequent failure, but with inoculation simply constant success, the disease having invariably disappeared within three weeks of the operation.

We are all veterinary surgeons, we have all had our outbreaks of Pleuro in the past, and probably will have in the future. How have we met, how are we to meet them? The country looks to us to do our best in dealing with contagious and infectious disease. We all wish to do our duty. May we do it according to our light.

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CASE OF "TRAUMATIC PERICARDITIS" IN A COW,  
CAUSED BY SWALLOWING A PIN.

BY J. R. GREEN, M.R.C.V.S., ALFRETON, DERBYSHIRE.

ON October 6th I was called upon to attend a cow at Shirland, near Alfreton, said by the owner to be in a weak, "lowering" condition, off food, and had been so for some time. She had come from grass three weeks ago, and had done badly ever since. Upon examining the animal I found her in a very weak and low state—entire loss of appetite, haggard expression of countenance, cold extremities, pulse accelerated and very feeble, temperature  $103^{\circ}$  F., respiration short and frequent, fæces very thin and light-coloured. She had calved on Saturday, October 1st, and had got rapidly worse since then. On auscultating the chest, only a faint, muffled sound could be heard, and over the region of the heart the "metallic tinkling" sound synchronous with the heart's action could be heard. There was also a dropsical condition of the breast and a well-marked "jugular pulse."

I diagnosed it as a bad case of "Pericarditis, with considerable effusion into the sac" and the thoracic cavity, and from the prostrate condition of the cow I gave it as my opinion that she would not recover. Mr. Langley, M.R.C.V.S., my assistant, who saw the case with me, was also of the same opinion. The owner, who thought that she was only suffering from a cold and loss of appetite, wished me to treat her, which I did until the 9th, when I said that it was useless to do more. On Monday morning early she was found dead in the cow-house.

Mr. Langley and myself made a *post-mortem* examination of the body on Monday afternoon, when the following lesions were found: Upon opening the abdomen a quantity of clear fluid—about five or six gallons—was found, which rushed out on the carcase being tilted over. The liver and kidneys were very pale and friable, and the large veins greatly distended and their walls very thin. The rumen contained a considerable quantity of food, but presented no signs of disease. The reticulum (second stomach) was full of ingesta, and the mucous membrane inflamed, and in some places detached. At the front part of the reticulum, in apposition to the diaphragm, was found a *common brass pin* about  $1\frac{1}{2}$  inches long. The point of the pin had penetrated the walls of the reticulum, had gone through the diaphragm, and was embedded in the pericardium. The reticulum, diaphragm, and pericardium were all connected by lymph bands.

In the thorax a similar quantity of fluid was found, but it was of a more purulent nature. The heart and pericardium was enlarged

to about three times its normal size. The pericardial sac was greatly distended with fluid (about five pints) of a yellow colour, and stinking. The heart itself was covered with a thick, granular coating of lymph, and presented somewhat the appearance of a "petrified sponge." At the point of injury the pericardium was firmly attached to the heart; elsewhere it was separated by the fluid. The heart and pericardium, when evacuated of the fluid, weighed  $14\frac{1}{2}$  lbs.

The organs were sent to Professor Robertson, at the Royal Veterinary College, London, as a specimen, and as I wished to send them in as perfect a state as possible I did not examine the interior of the heart minutely.

The animal had undoubtedly swallowed the pin, which had found its way into the reticulum during rumination; it had there penetrated the walls and had been attracted to the heart by its action against the diaphragm at the point in apposition to the stomach.

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## CHOREA.

BY HENRY C. WILKIE, M.R.C.V.S., WOLVERHAMPTON.

I AM induced to make this communication, not because I have any pathological discovery to unfold, but mainly because I believe many practitioners find cases of Chorea very unsatisfactory in their results, and because I had hitherto found them so myself.

A foxhound was brought to me some time since to be destroyed by chloroform, as he was suffering from a very severe attack of Chorea, a sequel to Distemper. I was, however, allowed to keep him, and looked about me for some fresh information as to this disease; but my inquiries did not result in much of any practical utility, and one veterinary surgeon, who has had considerable experience in canine practice, advised me to exhibit bromide of potash and chloral hydrate, and to insert a long *seton on each side of the dog's spine*. I must confess this treatment seemed original, and I was certainly somewhat staggered by the idea of it, but as I had no wish to inflict such savage punishment, especially on an unfortunate creature already greatly emaciated, I refrained from adopting it. However, I resolved not to aggravate nature more than I could help, so I gave a pill containing one grain Nux vomica and three grains Ferri sulph. morning and evening, plenty of animal food, and had him sponged with cold water and thoroughly dried every day. He would take no exercise at first, but in about a fortnight began to trot about, and at the end of a month the twitchings were much less violent; the dog began to lay on flesh,



and had a good healthy appetite. In about three months the twitchings had entirely ceased and did not return. I may mention that this dog was a powerfully-made, typical foxhound, of a celebrated strain which is now unfortunately becoming scarce.

I think there can be little doubt but that, in this case at least, any change which might have taken place in the nerve centres was only temporary (I will not say functional, since so much doubt rests as to the real existence of such a condition), and that the sole cause was the anæmic state of the body. I think the very indefinite *post-mortem* lesions so frequently conspicuous only by their absence (if we except the deficiency of hæmatin in the blood), rather point to perverted nutrition as an exciting cause of the symptoms than to any definite organic changes of nerve cells or fibres.

Although such changes probably exist in many cases and are beyond our ken, as in most cases of Dementia, etc., yet I think any such changes that may exist in Chorea must be only secondary to blood changes of a definite type.

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## AN INTERESTING CASE.

BY S. M. WILSON, M.R.C.V.S., ARMY VETERINARY DEPARTMENT,  
ALDERSHOT.

TROOP horse, Gen. No. 1281, Royal Engineers. Bay mare, six years old. Admitted May 10th, 1887, as suffering from Adenitis, swelling at inferior part of parotid gland (off side) as of an abscess forming. Fomentations applied, swelling subsided by degrees, and the mare was discharged cured on the 21st of May. She was not, however, sent to duty. There was considerable stiffness about the jaws; when the fingers were put into the mouth on the near side, the mare would move the lower jaw to the off-side and keep it in that position for some seconds, at times nearly a minute. She was very shy about the head, running backwards if approached quickly or suddenly, and experiencing considerable difficulty in mastication. She was put on soft food, viz., bran mash and scalded oats, green grass and hay, left in a large loose box and placed under observation. Meantime it was discovered that during her training, immediately before being admitted for Adenitis, she had reared up and fallen over backwards, the top of her head coming in contact with the stones. This much was reported to me when I took over charge on June 6th. I found the symptoms as above described. I found also that when the mare was turned into the paddock, she found a difficulty at first in getting the head

down to graze. This, however, disappeared in the course of a few minutes, but appeared again each day, when first turned out. On examining behind the ears, over the poll, I found the right side much larger than the near, but there was not the slightest pain on pressure, nor did the mare show any pain whatever except when I tried to open the mouth to any extent. She would then run backwards, and for a considerable time be very shy about the head. Occasionally, when out in the paddock, she would hold her head down, with her nose slightly out to the near side, and run round in a circle to the right; and now and then would run into the rails, apparently not knowing what she was doing. She would also stand in her loose box with her quarters in one corner, resting against the walls, head down as usual. Occasionally, also, she would give a violent start if she heard the least sound from the next box, or if anyone suddenly approached the box door. I consulted several officers of our Department in Aldershot, and we came to the conclusion that it would be well to apply a blister over the poll and a little way down the jaw on both sides. This was done on July 12th. After this I did not notice any change, except that the peculiar trick of holding the lower jaw on one side was not nearly so marked; there was still the same objection to the mouth being opened. I should remark that the mare seemed to suffer much more if turned out in the sun, and as the weather was exceedingly hot at times, this was very marked. I therefore had her turned out in the early morning and evening, keeping her in during the heat of the day.

On the 25th of August, I asked the riding-master to put the dumb-jockey on the mare and try by slow degrees if he could draw in her head. The first attempt was successful, but the reins were not at all tightened. A few days afterwards we tried again, but the mare did not appear to take so kindly to it, and afterwards I thought she was more shy about the head, and experienced more difficulty in lowering it to graze. On Sept. 6th, the third and last trial, she did nothing but run backwards; she was more shy than ever about the head, and indeed seemed generally upset by it. On Sept. 9th I again showed her to Mr. Walters, Inspecting Veterinary Surgeon, and she was brought forward for casting, with a recommendation that she be destroyed, as it was considered that it would be both cruel and dangerous to sell her. This was sanctioned, and she was destroyed on the 22nd of September.

*Post-mortem appearances.*—Found a large abscess with sinuses leading therefrom, some forwards, others backwards, and others across and penetrating between the funicular portion of the *Ligamentum nuchæ* and the lamellar portion situated above the atlas; contents semi-fluid and of the odour of fresh young peas; the solids con-



sisting of tissue somewhat firm and composed of numberless small oval *fluke*-shaped bodies. Two or more isolated abscesses *in* the muscular tissue and one *in* the *Ligamentum nuchæ* (funicular portion) just behind the occiput; contents consisting of above material, more or less inspissated. Numbers of small masses of inspissated and encapsuled pus in muscular tissue between posterior face of occiput and upper portion of atlas. One mass in the superior portion of capsular ligament, between atlas and occiput, pressing on spinal cord to a slight extent. Exostosis of bone on posterior face of occipital protuberance, and a large, round exostosis on upper and anterior portion of wing of atlas on the *right* side. The *right* condyle of occiput and *right* glenoid cavity of atlas partially united, with removal of the articular cartilage and necrosis of contiguous bones. There had been sprain of inferior dentata atloid ligaments, and there was immense thickening of the superior ones, and of the capsule of occipito-atloid articulations.

*Brain*.—A depression of 1 by  $\frac{3}{4}$  inch on upper central portion of left cerebrum, corresponding to a protuberance on the cranial surface of left parietal bone. Thickening of periosteum in front and at suture of the two parietals.

It is a noteworthy fact that the parietal bones were enormously thickened. The specimens have been deposited in the museum of the Army Veterinary School.

## REMITTENT ANTHRAX.

BY R. W. BURKE, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, LAHORE.

(Continued from page 245.)

*Post-mortem Appearances*.—The blood was dark and viscid. In some of the larger vessels it formed into distinct, long clots—a similar condition having been described by Arloing in *Charbon Symptomatique* of the French. Ecchymoses in the subserous and submucous tissues, but especially beneath the peri, and endocardium were constantly seen. V.S. (1st Class), Clayton also informs me that, in the latter situations, this lesion was never absent in a single case, his observations dating from August, 1886. The walls of the heart were soft and flabby, and the peri-cardial sac contained a large quantity of fluid. The lungs were the seat of congestion, and catarrhal inflammation, being enlarged and increased in weight, owing to consolidation. The Peyer's patches were found congested, and the mucous coat of the stomach showed dark-brown, irregular patches of extravasation. Very often the entire mucous membrane of the small intestine appeared swollen and congested; in many cases, ulcerations were also noticed.

The liver was enlarged, soft and friable. The spleen was also frequently enlarged and indurated, though not in all cases. Dropsical swellings were always present, generally under the arms, in front of the sternum, along the course of the trachea, and in the region of the larynx; also between the thighs, under the abdomen, etc.

*Diagnosis.*—From Relapsing Fever it is easily distinguishable by the following characters, viz.,—1. In Relapsing Fever several relapses occur during its course, whereas in this disease there is seldom more than a single relapse noted, and if the temperature rises at all after that, it is due to complications. 2. The digestive organs usually exhibit nothing particular in Relapsing Fever (Quain's "Dictionary of Medicine"); in Remittent Anthrax in the horse, digestive lesions, both in the stomach and small intestine, were found to be common in the last outbreak, and are characteristic also of Remittent Fever in man. In the horses of the 19th Bengal Lancers, for instance, which died from this disease, gastrointestinal lesions were seldom absent. And Veterinary Surgeon Ringe and Nuthall, A.V.D., mention cases of pronounced ulceration which came under their notice in several cases during the late outbreak. They were commonly seen, either as submucous extravasations or complete ulceration, in the stomach and small intestine of ponies belonging to the 8th Huzzars, under my own observation. 3. Pulmonary complications are rare in Relapsing Fever (Quain's "Dictionary"), but frequently existed in the outbreak of Anthrax in horses, both in Mr. Clayton's cases and in those seen by myself. Under the name of *Malignant Catarrhal Fever*, this form of Anthrax was well known to veterinary officers in charge of the late Government studs in India more than twelve years ago. V.S. (First-Class) Clayton tells me, with reference to the present outbreak, he does not remember a single case in which the lungs were found not affected on *post-mortem* examination, his observations extending from August, 1886. 4. Ecchymoses under the endo- and peri-cardium were so constantly seen in my own cases, as well as in those seen by the other veterinary surgeons, as to be almost diagnostic of Anthrax. 5. Paraplegia, Stringhalt, muscular tremors, etc., observed in these cases, are more common to Anthrax, than to Surra. The Principal Veterinary Surgeon in India says, "I have always been of opinion that the disease is Anthrax Fever. It coincides exactly in its symptoms, course, and *post-mortem* appearances with the disease as it has been known at the various stations in the Punjab." Facts everywhere show the widespread prevalence of Anthrax in all countries; and India is behind no other country in the world in the number of outbreaks of this disease seen in our animals. The mortality is high, which



is more common to Anthrax than Relapsing Fever (Quain's "Dictionary"). The cyanosis, or purple colouration of the conjunctiva, submucous extravasations in the stomach and small intestine, the constant ecchymoses under the endo- and peri-cardium, the lung complications, etc., are common to Anthrax and not Relapsing Fever.

The results obtained by the Principal Veterinary Surgeon's inquiries from the reports of veterinary surgeons in different stations in India, confirm and extend what has been known from clinical experience of the characters of Anthrax seen in other countries; and the exact knowledge obtained by the methods of inquiry employed, by carefully comparing the temperature charts, symptoms, and *post-mortem* appearances of different cases at different stations, will lead to an important investigation of the behaviour of this disease, and thus to a more exact method of treatment in the future. The results so far offer a field of research which requires the highest degree of patience and ingenuity on the part of the investigator. The diagnosis may not be easy in a few complicated cases, but due observation of the peculiar combination of symptoms will enable careful practitioners to make a good practical diagnosis.

With reference to its clinical features, it has been stated that Relapsing Fever in the horse is "invariably fatal" (see Steel's report on Relapsing Fever). Reference to the literature of Relapsing Fever shows that this Fever is fatal only in about two or three per cent. of the cases witnessed.

Mr. Steel describes ulcerations in the stomach and intestines, and other structural changes of important organs as frequent in equine Relapsing Fever, which is opposed to general experience regarding both human Relapsing Fever and Surra in the horse. On reference to this point, I note that Dr. Evans was most careful in pointing out that absence of structural changes was peculiar of Surra (see VETERINARY JOURNAL, July, 1881, p. 6)—a disease Mr. Steel has stated to be synonymous with Relapsing Fever. Mr. Oliphant, Principal Veterinary Surgeon in India, in his D. O., dated 12th February, 1887, writes: "Some of the *post-mortem* appearances given in Mr. Steel's report are those of Anthrax. I have seen very extensive outbreaks of both diseases, and there is very little resemblance between the *post-mortem* appearances of the two. In one outbreak of Surra in the 18th B. C., in which 180 horses died, I made dozens of *post-mortem* examinations, and the appearances all were identical—extreme pallidity of all the tissues, with perhaps a trifling serous effusion into the abdomen, etc. In fact, the animals looked as if they had been starved to death."

The digestive organs usually exhibit nothing particular in Relapsing Fever; whereas in the cases Mr. Steel describes as Relapsing Fever, these lesions were seldom absent.

Pulmonary complications are rarely seen in cases of Relapsing Fever; whereas they were so constantly present in the Meerut outbreak as to be almost diagnostic.

The interval of freedom lasts usually a week in ordinary Relapsing Fever, and four or five relapses at most (usually only one or two) have been seen in practice; but Mr. Steel records an interval of four or five days only, and an unlimited number of relapses in the usual run of cases he witnessed in the Burmah ponies.

The conclusions to be arrived at from the above data may be briefly summarised thus:—

(a) That several different diseases, possessing entirely opposite characters, have been probably considered under favourite designations.

(b) That in many cases two or more diseases have co-existed in one and the same patient, the one supervening on the other.

(c) That an unlimited number of relapses, noted every 4th or 5th day, point most clearly to the existence of Intermittent Fever (Quartan), pure and simple, and that organisms of the kind first described by Dr. Evans as characteristic of Surra, appearing in the blood, may be due to Surra supervening on a purely Intermittent type of Fever.

(d) That the presence of Anthrax organisms in the blood may be similarly due to Anthrax supervening on Fever of a purely Intermittent or Remittent type.

(e) That the presence of *filaria of various species* in the blood of many animals is a very frequent concomitant of health, and is therefore not in any way related to the diseases in which they have been noted (see "Parasites in the Blood" in *Lehrbuch der Specielle Pathologie und Therapie der Haustiere*, by Friedberger u. Fröhner, 1886; also VETERINARY JOURNAL, January, 1887; and Dr. Evans' paper on "Surra" in the VETERINARY JOURNAL, July, 1881, p. 10). Under weakened states of the body, as in Surra, doubtless the parasites multiply rapidly, and even assume pathogenic properties. (See "Filaria Immitis in the Heart of a Dog, Death," in the VETERINARY JOURNAL, December, 1881.)

There is every likelihood that in Surra a state of system exists which is peculiarly fitted for the growth and multiplication of parasitic organisms. In some parts of Europe endemic visitations of pernicious Anæmia are frequently noted, especially among the poorer classes. The patients sometimes appear ill for several months before any prominent symptoms of the disease are noticed, save a progressive Anæmia, which gradually destroys life from simple exhaustion.

(f) That pernicious Anæmia in man is probably allied to Surra. I will for the present assert that Surra is pernicious Anæmia of the horse.



(g) That there is an Intermittent as well as a Remittent form of Fever in the horse has been clearly proved, I think, by the temperature charts and *post-mortem* changes recorded in the outbreak in Meerut, as well as in other stations of which clinical reports and charts were furnished me for information, through the courtesy of the Principal Veterinary Surgeon, at that time of my investigations. I may state here that, so far as the *post-mortem* appearance of the disease are concerned, V.S. (First-class) C. Clayton, A.V.D., has preceded me in suggesting, before my investigations were commenced in Meerut, that "probably" the horse suffers from a form of "Malarial Fever" of which the profession has taken no note in the past; and this is what was proved by the temperature charts of cases investigated by me in Meerut.

(h) That, probably, Surra and Relapsing Fever are two distinct diseases—as distinct as Remittent Fever is from Intermittent, or Anthrax from Surra, etc.

(i) That the presence of Anthrax may be asserted positively by the presence of rods peculiar to this disease; (b) which, moreover, stain readily in special colouring fluids; and (c) are inoculable in suitable media and in susceptible animals.

The question arises—Is there a form of Intermittent and Remittent Anthrax in our animals distinct from the simple forms of Intermittent and Remittent Fever, or is the one only a precursor of the other in most cases? Reference to the literature of the subject shows me that we must at present acknowledge both views to be correct; for many continental veterinarians, and Bollinger in particular, have noted the occurrence of Intermittent Anthrax in cattle to be frequent in some parts of Germany; and Röhl and Professor Dieckerhoff, both describe this form of Anthrax as common in Germany (*vide* Röhl, *Lehrbuch der Pathologie und Therapie der Hausthiere*, 1885; and Dieckerhoff, *Lehrbuch der Speciellene Pathologie und Therapie für Thierärzte*, 1885). The mortality also was so high in the early part of the Meerut outbreak as to preclude the possibility of the disease being only simple Intermittent and Remittent Fever; but that some few cases were those of simple Intermittent and Remittent Fever is not only likely, but, I think, very evident. Indeed, there is no evidence to reject the possibility of Intermittent and Remittent Fever and Anthrax having co-existed at one and the same time and in the same patients, as Emphysema Infectuosum and Anthrax described by Feser, Bollinger, and others on the continent of Europe. (See VETERINARY JOURNAL, February, 1887).

We have no mention in veterinary literature of simple Intermittent and Remittent Fever affecting the horse; though there is no reason why the lower animals should not suffer from these Fevers as well as

man. Indeed, that the horse does suffer from the above mentioned types of Fever may be assumed as a fact established by the temperature charts kept by me in the case of ponies belonging to the 8th Hussars, in the present outbreak. These charts, moreover, prove, in the first place, that Intermittent and Remittent Fever in the horse bears the same relation to Anthrax as Emphysema Infectuosum, for example, bears to Anthrax, and they also, in the second place, demonstrate the possibility of Anthrax being complicated with cases of simple Intermittent and Remittent Fever. It may be stated, with reference to Remittent Fever, that there is a morning remission of usually one degree noted in health, and as a purely physiological process; but I know of no "physiological process," either in man or animals, in which the morning temperature ever falls five and six degrees below that of the evening! There are manifestly three distinct kinds of diseases with which the veterinary surgeon must in particular contend in future, among others—Intermittent Fever, Remittent Fever, and Anthrax; and, very frequently, any one of the above supervening on the other, and even complicating each other, as in the present outbreak. Veterinary science has no broader or grander avenue for investigation than the subject of Fevers in the horse.

*Etiology.*—Some blood sent for my examination previous to my arrival in Meerut showed very different results in different cases. Thus, the first blood enclosed in hermetically sealed tubes showed merely putrefactive organisms. In subsequent blood, mounted fresh on slides, I found, on examining under a one-twelfth objective, several small bacteria, in the form of spherical or slightly oval points, either isolated or in clusters, and which existed in greatest number towards the circumference of the cover glass. I scraped some of this blood on the point of a penknife, and, after diluting it in water, injected a very small quantity under the skin of a rabbit, which died in the course of a couple of days, presenting innumerable longer or shorter rods in its blood examined under the microscope, similar to the *Bacilli Anthracis* seen in other animals when suffering from Anthrax. Similar injections subsequently made on these animals also produced death, the blood containing numerous rods and chains. Consequently, when I arrived in Meerut, I informed the Inspecting Veterinary Surgeon the result of my examinations of the blood I had received from Meerut, before proceeding to study the clinical aspects of the disease in the horse. Next day a horse affected with the disease was shown to me by Veterinary Surgeon (First Class) C. Clayton, and on examining some blood taken from the angular vein, and placed under the microscope while it was yet fresh, I found the same organisms present which I had seen on slides previously



prepared for me, and which were afterwards examined also by Veterinary Surgeon (First Class) C. Clayton, A.V.D. I am glad that I had an opportunity of showing these organisms to Inspecting Veterinary Surgeon Hallen, when in Meerut the other day. Veterinary Surgeon (First Class) Glover also saw one or two slides containing blood from a stallion which had succumbed to the disease some days previously, and in which several short rods were present, both single and in clusters. These rods stained readily in methylene violet and Bismark brown solutions (obtained through Treacher and Co., of Bombay). Since then, numerous slides have been examined containing fresh blood from affected animals, and have always yielded the same organisms, but more during certain stages of the disease than during others. When the fever is not high, they are sometimes difficult of detection, or may be even altogether absent. In the first cases from which blood was sent to me in hermetically sealed tubes and on slides for my inspection, I was unable to trace the presence of any parasites; and this may be owing probably to the fact already explained by Dr. Fleming in the VETERINARY JOURNAL for September, 1878, namely, that blood collected in tubes deprived of air and hermetically sealed has been shown to lose all activity in about ten days. Pasteur's view of the germs of Anthrax being brought up to the surface by earth-worms has also been disproved on this hypothesis, as the *Bacilli Anthracis* practically perish in about ten days outside the animal body and when deprived of oxygen (Toussaint), as they would be in hermetically sealed tubes and under compressed cover-glasses. The slides sent for my inspection, moreover, had the cover-glasses carefully glued on at their circumference, which completely deprived the organisms of air. Lastly, Veterinary Surgeon Chicoli (*Il Medico Veterinario*, March, 1876) states that during the year 1875, there appeared in the district of Corleone, Sicily, an enzooty of Anthrax among mares, in which all the lesions of Anthrax were found to be present, on post-mortem, but no bacilli could be discovered in the blood. And yet it was impossible to deny that the disease was Anthrax; for, the same disease which broke out among the bovines—driven into the pastures vacated by the mares—was characterised by an abundant development of the bacilli in the blood.

*Pathology.*—Dr. Wallace Taylor, who studied this disease in Burmah ponies in 1880-1, known under the name of "Kakke," describes the presence of a small, rod-shaped bacillus in the blood of every case examined, which he found to measure a little longer than a tubercle bacillus, and slightly also thicker than it. He suggests that it is probably identical with the bacillus found in "Beri-beri" of the human subject. But, as Dr. Taylor did not

try any inoculation experiments on animals, or use even staining re-agents, he was not in a position to come to any classification of an organism he was certainly the first to describe in this country. It will be understood, without our saying so, and merely from the size of the organism described, that it is the *Bacilli Anthracis* which Dr. Taylor actually noted. The determination of a particular species of organism, merely from its outward appearances, however, is not always an easy task, and only comes through a complex, and sometimes tedious, method of investigation. Experience has now suggested two great roads to inquiry, which lie in a direction that investigators a few years back did not look in; they are staining tests and inoculation experiments. We know that many known micro-organisms may now be stained by special staining re-agents, and, in regard to these bacilli staining readily in methylene violet and Bismark brown solutions, in addition to their size and morphological peculiarities, conclusively establish their identity with the *Bacillus Anthracis* met with elsewhere. While the history of the short rods producing longer rods and chains on inoculation of rabbits still further establishes this identity, when taken in connection. It is well known that the microbes of Anthrax multiply by spores as well as by fission; and there appears very little doubt but that the smaller rods seen by me in this disease, side by side with the longer ones, bear the same relation to one another as a part does to a whole—the first being, in fact, simple off-shoots from the parent rods. One can readily understand, too, the large numbers of the smaller rods in comparison with the longer ones, as the same difference in numbers between parent and offspring would be found among other species also, from the lowest forms of life to man himself! And the germs of this disease prove no exception to the rule; on the contrary, they serve as a striking illustration of the supremacy of younger over parent life. So much so is this the case, that a leading characteristic of this disease was found to be the comparative absence of longer rods and chains in the blood of our patients, other than the rabbit, in which latter chains and rods usually abound. So scarce are the longer rods that Toussaint considered the smaller ones, as seen in this disease, to be peculiar of an outbreak of Anthrax he saw in France a few years ago, and suggested they should be regarded as a distinct species, differing from the *Bacillus Anthracis* in its physical characters, but possessing similar properties of engendering virulent Anthrax on inoculation of a healthy animal.

(To be continued.)



## Editorial.

### LEGISLATION AND VETERINARY SCIENCE.

IN the remarks with which Earl Spencer, who acted as chairman at the opening of the Royal Veterinary College on October 2nd, supplemented the address by Professor Lowndes, reference was especially made by his Lordship to the two schools with which he was more particularly acquainted in regard to animal diseases of a communicable nature—the legislative and the medical; and while he did not pretend to know much about the latter, he confessed to a serious acquaintance with the former. And perhaps there are no statesmen in this country who can lay claim to a more thorough knowledge or wider practical experience of legislation in its effects upon the disastrous plagues of animals, than the distinguished nobleman who so well presided over the assemblage of veterinary surgeons and students in Camden Town. For he was President of the Cattle Plague Committee which sat in 1865 to investigate the nature of, and devise measures for dealing with, the terrible scourge which had been allowed, through stupidity and supineness, to spread itself over the kingdom, and almost ruin a most important section of our agriculture; and while Lord President of the Privy Council he had to deal with the limitation and suppression of that and other infectious disorders, so far as legislation is concerned. The enlightened and energetic manner in which he discharged his onerous duties in these capacities certainly entitle him to a far wider recognition as a public benefactor than has been awarded him, and the veterinary profession has certainly every reason to consider him as the statesman who has done most to advance legislation for the control and extinction of contagious diseases among animals, as well as the one to whom it owes the Veterinary Surgeons' Act of Parliament. Therefore, on the subject of legislation in the matter of spreading destructive maladies, Earl Spencer was well entitled to address the veterinary profession. But it is evident from his remarks, that the necessity for legislation to cope with such enemies to our animal population is rather a reproach to veterinary science, and that curative measures are to be preferred and sought for instead of resorting to the prompt and always efficacious stamping-out process sanctioned by law. This, it must be confessed, is the popular notion, but it is scarcely a sensible one. What veterinary science should do in dealing with such diseases, is to indicate the quickest, most certain, and least expensive and troublesome way of getting rid of them; it is purely an economic question, and if it is more advantageous to kill a few animals to prevent the spread of a disease, no matter how amenable it may be to scientific medical treatment, than to have many thousands to cure, then the legislature ought to prescribe

the former and discountenance the latter. It can be no reflection on our science that it indicates slaughter of infected creatures to stay the progress of even an easily-cured contagion, when it has shown that this step possesses every advantage—when combined with other sanitary measures which it recommends to legislators—over medical treatment. Indeed, it must be looked upon as a most unselfish, and even personally prejudicial course to suggest, as from a mercenary point of view medical treatment of such disorders would be immensely more beneficial to veterinary surgeons than the stamping-out system by slaughter and disinfection. To keep a contagious disease alive in the country, simply that veterinary surgeons might be profitably employed in curing the sick animals, would be extremely selfish, and indeed unpatriotic, though it might look more scientific. The fact is, legislation and sanitary science must go hand-in-hand; the one cannot dispense with the help of the other, for it is only upon their combined action that communicable diseases can be kept at bay, and finally exterminated. It can be no reflection on veterinary science that it needs legislative aid, in order to enable it to grapple successfully with epizootic maladies. The truth of the maxim, that "Prevention is better than cure," no one can dispute when considering these, and though its being carried into effect is adverse to the interests of veterinary surgeons, yet without the participation of their science legislation would not know when, where, or how to intervene, nor how to make its intervention absolutely effective if it chanced to do so without scientific guidance.

In the prevention and suppression of contagious diseases veterinary science is more favourably situated than medical science, and the legislator cannot stir without invoking its aid; while by means of its teachings, if he will cause them to be carried into effect, the scourges which afflict animals, and prove so hurtful to the welfare of man, can be entirely abolished. Surely this is a more scientific and desirable aim than the discovery of cures or the adoption of medical treatment, no matter whether this be uniformly successful in its results.

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## RABIES AND HYDROPHOBIA.

SUMMARY OF EVIDENCE TAKEN BY THE SELECT COMMITTEE OF THE HOUSE OF LORDS, BY JAMES LAMBERT, F.R.C.V.S., INSPECTING VETERINARY SURGEON, ARMY VETERINARY DEPARTMENT.

THE report of the Select Committee of the House of Lords, Session 1887, on Rabies in dogs, has now appeared in a Blue Book, and as it is a subject of the greatest interest to the profession, it is hoped that a short summary of the scientific and other evidence may be of advantage to the readers of the VETERINARY JOURNAL.

The following peers constituted the Committee:—The Lord President—Lord Cranbrook—Duke of Beaufort, Earl of Coventry, Earl of Carnarvon, Earl of Onslow, Earl of Zetland, Earl of Kimberley, Lord Walsingham, Lord Ribblesdale, Lord Poltimore, Lord Mount Temple, and the Earl of Miltown.



The witnesses will be quoted in the order in which they gave their evidence.

Professor Victor Horsley, F.R.S., F.R.C.S., of the Brown Institution, says: He is perfectly convinced that the virus of Rabies is alone maintained in existence by transfer from animal to animal, and that it is universally admitted by scientific men to be a microbic, or, in other words, a germ, disease. He is convinced that there is no such thing as spontaneous Rabies. Rabid deer can communicate Rabies to other deer by biting. Although deer have no upper incisors, yet rabid ones can worry each other very much, as has been seen in instances at the Brown Institute. Rabies is not more aggravated by climatic conditions, such as heat and cold, soil, etc. One particular breed of dogs is not more susceptible than another. Lancashire, owing to the large number of dogs kept there, affords most cases of Rabies. Rabies in London was much decreased by the muzzling regulations of 1886. Thinks legislation regarding the disease should be universal, and that effectual muzzling would stamp out the disease, and the very fact of a dog not having a muzzle would indicate that he should be at once seized. About 40,000 stray dogs were destroyed in London in 1886.

The average period of incubation of Rabies in a dog is six weeks; in man the average period may be the same, or a little more, but in both the time is often longer, even sometimes up to six months or more. The preliminary signs and symptoms of Rabies should be printed on the back of each dog license, as suggested by Dr. Fleming long ago. Rabies in dogs always terminates by paralysis, first of the hind legs, and then of the rest of the body. In Dumb Rabies the preliminary stages of excitement or aggressiveness are very slightly marked, and the animals soon become paralysed; the jaw becomes paralysed early, and the dog cannot bark, hence it is called dumb madness. Thinks that if persons are not subjected to M. Pasteur's treatment until after the tenth day it is too late. Has preserved the spinal cords of rabid dogs for a month, and then found them still virulent. A person cannot be pronounced safe until six months after M. Pasteur's inoculation. Rabies in dogs is most prevalent in autumn. Recommends, to stamp out Rabies, the compulsory muzzling of dogs throughout the country as well as in towns, except to sporting dogs while under control. His friend Dr. Dowdeswell has, by experiments, shown distinctly that the spinal cord is not infective until the infected animal begins to show symptoms, which is very strong evidence to show that the animal's saliva is not previously infective. In Scandinavia—that is, Norway and Sweden—muzzling is enforced, and it has stamped out Rabies. There is a six months' quarantine there, as there is also in New Zealand. The Prussians think that Rabies is oftenest introduced into their country from adjoining Russia. In Vienna puppies are subject to the payment of the dog-tax from the day on which they cease to be suckled. All dogs in Baden carry the address of their owners on their collars, and if a dog is seized by the authorities as rabid, the owner can be at once referred to in order to ascertain whether any other animals have been bitten, etc. This regulation has done immense good, and there has been no reported case of Rabies in Baden for some time. Foreign legislation comprises three elements—quarantine, muzzling, and registration. The best condition of a district would be that dogs should be duly registered, the tax paid regularly, and all stray dogs cleared off. Believes that healthy dogs have an instinctive dread of a rabid one when symptoms are developed; has often seen this. The symptoms of Hydrophobia have remained the same, as we know from trustworthy records, for quite two thousand years. The disease was well recognised by Hippocrates and his contemporaries, and was then called "Lyssa."

The death-rate from rabid wolves is high, because the wolf makes a very

severe wound, and invariably attacks the head. Thinks the best caustics to employ for rabid bites are nitrate of silver, the hot iron still better, but best of all, pure carbolic acid. Thinks only ten per cent. of persons bitten by rabid dogs contract Hydrophobia. M. Pasteur does not think that in his system of inoculation he is introducing a weakened or attenuated virus, such as we believe we introduce in the case of vaccination, for example; but he thinks that he is introducing a chemical substance, the product of the life of the micro-organism or disease germ. This chemical substance hinders the development of the life of micro-organism, and this it is which he is putting into the patient.

Professor G. T. Brown, C.B., M.R.C.V.S., thinks that Rabies is never spontaneous, and that this is as clearly proved as anything in science. Dogs have been in France experimentally subjected to all kinds of hardships without producing anything resembling Rabies. The evidence is quite clear that no condition of climate can produce the disease, or, indeed, much influence its spreading when it is once introduced. It broke out in Lapland, but was quickly stamped out, and that country is kept free, like Sweden and Norway, by practically prohibiting the importation of dogs. After the symptoms of Rabies are developed, a dog may look quiet and intelligent, yet will fly at any person going near it. After an animal has become infected, there are no symptoms until the incubation is completed. Believes that if universal muzzling were efficiently carried out for twelve months, we should get rid of the disease in this country, and agrees with Professor Horsley that muzzling is the most simple, perfect, certain, and effective method. Death occurs, after the symptoms are developed, in three or four days, or within a week.

Professor William Pritchard, M.R.C.V.S.: In the case of dumb madness, the muscles of the jaw become paralysed, and the jaw drops by its own weight, and the animal is unable to bite except by a spasmodic jerk; but the saliva of such a dog is just as poisonous as in the case of the rabid form of the disease. In the case of ordinary Rabies, the distinctive symptoms are mainly the frenzy of the animal, and desire to bite anything he may come in contact with. The number of deaths from Hydrophobia has considerably decreased in consequence of stray dogs being destroyed. One of the indications of Rabies coming on is the dog's endeavouring to escape from the house. Thinks that a dog found without a muzzle (if muzzling regulations were in force) should be immediately seized, whether affected with Rabies or not. If universal muzzling were undertaken, it should be done by the central authority in London. He had a dog in which the period of incubation was a year and three months, but does "not unfortunately possess any records of the case," although he is quite positive about it. Would certainly advocate muzzling dogs to get rid of Rabies, provided it was universally done. Is firmly of opinion that there are rabid foxes in the country in a wild state. As to difference between Epilepsy and Rabies, the epileptic fit comes on at once, without the dog showing any symptoms of illness of any kind previously. He is unconscious, and does not know what he is doing, whereas in Rabies he is intentionally mischievous.

Mr. A. J. Sewell, M.R.C.V.S., says that more than three-fourths of the dogs killed by the police in London were suffering from Epilepsy, and not from Rabies at all. There is no comparison between the two diseases whatever. Agrees that if muzzling were effectively carried out throughout the British Islands it would stamp out Rabies, provided also that the importation of dogs was prohibited. If he saw a dog during life he could be quite sure whether it was rabid or not by the symptoms. In some cases when Rabies is first developing the dog is just off his food, and nothing more is observable. In cases of Rabies it always appears to be the last thing suspected by the owner. One of the first symptoms of Rabies is to attack other dogs. No



case of Hydrophobia has occurred among the London police. A few of those bitten were sent to M. Pasteur last summer. The use of the muzzle has considerably diminished Rabies in London, and there is no cruelty in applying a properly made muzzle. Thinks that universal muzzling would stamp out the disease in less than twelve months. Would recommend a regulation muzzle, which consisted of just a wire front kept on by leather straps, and thinks that with that pattern there is no cruelty whatever. Does not think that Rabies can be developed spontaneously.

*(To be continued.)*

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### THE EFFECT OF SALTING UPON THE VIRULENCE OF ANTHRACOID PORK.

BY F. PEUCH.

(Comptes Rendus de l'Académie des Sciences de Paris. Tome cv. 1887. No. 5.)

As experience has demonstrated that swine die of Splenic Fever, the author considered the investigation of this question of importance. He took the leg of a pig which had succumbed to the disease, and inoculated two guinea-pigs from some of the juice, and thus demonstrated its virulence. After the inoculation the leg was kept in pulverized sea-salt for six weeks. A piece of the flesh was then excised, soaked for two hours in filtered water, and passed through a press. With the resultant juice he inoculated four guinea-pigs and three rabbits. The result, beyond slight swelling and redness of the part, was negative. Inoculation of a flask containing sterilised beef broth, incubated at a temperature of 30°C. for several days, produced innumerable cocci and bacilli. From this growth a rabbit and two guinea-pigs were inoculated with negative results. But imperfect salting left the meat virulent. A ham was salted for fourteen days, was not completely covered, but nevertheless gave forth no putrefactive smell. The juice from this leg was virulent. Three rabbits were inoculated; one died in ninety-six hours. Three guinea-pigs were inoculated, and they all died as well as the rabbits of Anthrax. A guinea-pig was inoculated from a cultivate of the juice employed, and it also succumbed to Anthrax.

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### OF THE VIRULENCE OF TUBERCULAR MATTER AFTER HEATING, DRYING, SALTING, FREEZING, PUTREFACTION, AND SOAKING IN WATER.

BY GALTIER.

(Comptes Rendus. Vol. cv. 1887. No. 4.)

THE author reports that desiccation for several days, great changes of temperature, and freezing, failed to destroy the virulence of the bacillus. Salting for several days also had no effect upon it. He then draws attention to the necessity for sanitary precautions connected with the treatment of consumptive patients, both human and quadrupeds, and of the necessity for properly treating the straw, evacuations, etc. Diseased animals may infect anything they come in contact with by their excretions, particularly drinking water. If the patient's intestines are tubercular, the fæces are infectious; if the kidneys, the urine. He reproduced Tuberculosis by inoculation from the urine of a tuberculous rabbit. In order to prevent the spread of the disease to man and animals, Galtier insists upon the necessity for thorough disinfection of everything a tuberculous animal has come in contact with—the evacuations, the stable, the bedding, etc., etc.

## SYNOPSIS OF A PAPER UPON SADDLE GALLS AND ALLIED INJURIES AMONGST CAVALRY HORSES.\*

BY F. PETERS, SENIOR VETERINARY SURGEON 17TH MECKLENBURG DRAGOON REGIMENT.

AFTER pointing out that saddle galls occupy a very important position in veterinary surgery on service, and that it is necessary to use the simplest therapeutic agents, the author draws attention to the absolute necessity there exists for a thorough knowledge of the causes which may give rise to this class of injury, in order that animals with slight galls may still be ridden without aggravating the malady. It is the first duty of the surgeon on active service, where horses cannot be thrown out of work, to arrange mechanical contrivances whereby the injury may be so relieved from pressure that the horse can be ridden without the gall becoming worse at any rate, and often cured.

Peters divides saddle galls into sore withers and sore backs.

*Causes of Sore Backs or Panel Galls.*—The accidental causes, such as sand or small stones under the numnah, dried-up sebaceous secretion, careless saddling, or lounging of the rider, come more under the province of military discipline. Long experience has convinced the author that sore backs are not so much due to the above causes as to faulty position of the saddle.

The "Bock saddle," on account of its strong and inelastic make, is well suited for hard wear on active service; but it has the important disadvantage that its rigidity prevents it adapting itself to the changes in shape of the horse's back which occur, particularly in weak-backed horses. This may be remedied in peace time by changing the saddles or alteration of the stuffing; but on service these alterations may take place throughout the horses of an entire regiment in a few weeks; the material is not then always at hand. As the changes referred to, from hard work and deficiency of forage, take place according to certain anatomical and physiological laws, it is possible, if guided by a knowledge of these laws, when selecting the saddle for each horse, to prevent, to a great extent, the bad effects of emaciation.

*Changes in the Vertical Section of the Back (Querschnitt).*—The panels of the saddle, as is well known, rest upon the very thick, elastic, and soft muscles of the back which have the ribs for their foundation. It is also well known that neither emaciation nor its opposite has any effect upon the position of the ribs, whereas atrophy or hypertrophy of the muscles have a most important influence upon the shape of the back. The change will be in direct proportion to the thickness of the muscular structure of the part. As the muscular structure is thickest close to the spinous processes of the vertebræ, it follows that in emaciation the falling away will be greater at this part than farther away (laterally). Therefore this part subsides more. Now take a saddle which fitted a horse when fat, and try it on the same horse when lean, and it will be found that the outer edge of the tree rests upon the back, but the inner edge does so only slightly, or not at all. Changes in the dorsal section of the back are without doubt the cause of the frequent saddle galls from "Bock saddles." This view is supported by the frequency with which the galls occur under the outer edge of the trees in horses which are poor, or have become so.

To prevent these galls it is therefore necessary, when fitting the saddle before going on service, to see that the inner edge rests somewhat more firmly upon the back than the outer, because all horses fall away more or less.

It has been shown that where the muscles are thicker the falling away is

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\* Translated from the *Archiv f. Wissenschaftliche und Praktische Thierheilkunde*, by F. Raymond, A.V.D.



greater. This, therefore, occurs to the greatest extent near the withers. In such cases the saddle will tend to slip forwards under the weight of the rider. In bad cases, the bridge of the saddle will rest upon the top of the withers, and thus cause damage.

Peters points out the vast importance of constant inspection of saddlery on service or when forage is scarce. He states that galls to the anterior part of the back are comparatively rare (in Prussia).

*Sore Backs and their Treatment.*—The author says that sore backs in cavalry are of less importance than sore withers. He points out that all galls should receive immediate attention. There are two great systems of treatment—the cold water and the warm water. He recommends the cold at first, particularly for slight cases, and the warm when there is suppuration, etc. He thinks moist clay a good means to apply the cold method. In case of large serous abscesses, he says it is useless to employ other than surgical means, and recommends that the abscess be emptied subcutaneously, then treated with gentle pressure and energetic application of cooling remedies.

As to the treatment of hard, black “sitfasts,” undermined with pus, the author states that the healing process will not go on properly so long as the necrosed tissue is present. It is therefore necessary to use energetic surgical means, and to remove it with the knife; but it is not advisable to proceed in this manner where there is a recent sore back, because the outline of the dead portion is not properly defined. But he again points out that the duty of a veterinary surgeon on service is not to operate when all the horses of the corps are wanted, but to patch up, to prevent things getting worse, and to seize an opportunity for radical cure when the regiment gets into cantonments, or is otherwise resting.

*Padding of the Saddle in treating Sore Backs.*—Peters recommends the padding of the saddle with straw or felt, tow or canvas. The part in apposition with the gall should be removed. He points out that the greatest care is required in applying this method, otherwise bad results follow. He says that straw made into a mat is the cheapest and readiest means. Long smooth straw should be selected, and made into a number of small firm bundles; these are tied together with string, and strapped very tightly on to the panels; the mat should be about an inch thick. The saddle should then be fitted with a numnah, and the portion to be removed carefully marked. About an inch beyond the portion immediately touching the sore should also be excised. Care should be taken to observe the build of the horse, so as to note in which direction the saddle is likely to gravitate when a man is on it. In one horse it may slip forwards, in another backwards. Allowance must be made for this, or else the wound may not be saved after all. It is almost needless to say that none but a *horseman* can be trusted with the fitting. The straw mats are very useful, particularly when very large numbers of horses are falling away in condition, and no other material can be procured. They are also useful when the anterior part of the channel is too narrow, and pierces the withers.

Besides relieving the part from weight, it is necessary to prevent friction as far as possible. Peters recommends that a very smooth piece of linen be carefully sewn into the numnah, and that the linen be smeared with fat or tallow, or better still, with a solution of tannin in glycerine, 1-10. The latter remedy does not become rancid like the first.

*Sore Withers.*—This injury is not invariably caused by direct pressure from the bridge of the saddle, but more frequently by rubbing by, or creases in the numnah. The results of the first-mentioned class are, as a rule, serious, those of the latter of less importance.

For the sake of convenience of description, Peters calls the first “sore

withers," and the second "galled withers." He points out that galled withers occur generally on one or both sides of the withers (not on the top). They occur almost invariably when the "Bock saddle" is used, in horses with a high but short wither, which rises abruptly from the back. The numnah on such a wither has a tendency to crease. The injury is generally found just under the ends of the points of the tree; it very rarely runs on to necrosis of skin, and then only through carelessness. To prevent "wither galls," Peters says it is sufficient that the numnah should be well up in the channel of the saddle in saddling; there should be room for a man's feet between the skin and the numnah.

*Sore Withers.*—This injury is caused generally by pressure of the bridge of the saddle on top of the wither, and is a most serious affair, as a rule. It can only occur from great emaciation of the horse, gross carelessness in fitting, or very bad riding. The structures involved may be diagnosed by the amount of pain shown; there is less flinching when the skin and muscles only are involved than when the fibrous tissues and bones are implicated; the patient will, in such cases, often tremble and perspire when the place is touched. Swelling of the lymphatics is not diagnostic of the amount of injury. It may occur from a slight gall, or from most serious injury.

*Treatment.*—Peters' system is to do the utmost to avoid an open pustulous wound; but if any fluctuation, whether deep or superficial, shows that serum or pus is present, he evacuates it with an aspirator. The process has to be repeated, and during the intervals cold and gentle pressure must be constantly applied.

Cases of fistulous withers should be well opened, all necrotic tissue removed as soon as possible, and careful drainage applied.

*Sweat Eruption (Schweisausschlag).*—An eczematous eruption occurs sometimes on that part of the back which is covered by the posterior part of the numnah and shabraque, but free from the pressure of the panels of the saddle. The skin is found to be tender when the saddle is removed, slightly swollen, and with a number of small vesicles. These last soon burst and pour forth a sticky fluid upon the skin, which makes it feel quite moist. If left to itself the discharge lasts two or three days, the exudate dries into crusts; these fall off in five or six days and leave the skin hairless, but smooth. The malady only appears during the hot months of the year, when the horses have undergone long, dusty marches. Peters explains the phenomenon by pointing out that the shabraque and numnah cover this part sufficiently to cause profuse perspiration, but not enough to prevent dust, etc., from covering the part and working into the orifices of the glands; that this blocking prevents the exit of the secretion by the normal channels, and the eruption is the result. He says cold applications are likely to do harm, and recommends warm water and warm solutions of soap, which will often stop the disease before it reaches the eruptive stage. When the vesicles have burst he recommends oak gall or tannin lotions.

*Retention Sores (Retentions geschwulste.)*—These are hard lumps, about as large as a hazel-nut, felt on the skin, caused by blocking of the sebaceous follicles. So long as they are not irritated they are of little importance, but if rubbed by the saddle, etc., they soon become converted into abscesses. The small recent ones can generally be removed by soap and water applications, but the larger and older ones have to undergo a suppurative process. They should be brought to a head and lanced. Fresh eruptive crops may be expected unless something is done to prevent them, and for this purpose Peters recommends washing, with soap and water, of the seat of the disease twice a week for some time after. This should be carried out as soon as the saddle is removed.



FIRST REPORT OF THE PATHO-BACTERIOLOGICAL EXPERIMENT-STATION FOR CONTAGIO-INFECTIOUS ANIMAL DISEASES OF THE STATE UNIVERSITY OF NEBRASKA, U.S.A. (FRANK S. BILLINGS, D.V.M., DIRECTOR.)

BY THOMAS BOWILL, M.R.C.V.S., ASSISTANT.

(Continued from p. 267.)

*Diagnosis.*

Peritonitis visceralis adhesiva ; Enteritis tenuæ catarrhalis et hæmorrhagica ; Enteritis crasus ulcerativa follicularis caseosa ; Splenitis parenchymatosa ; Nephritis parenchymatosa ; Hepatitis parenchymatosa et degeneratio adiposa ; Gastritis catarrhalis ; Lymphadenitis parenchymatosa hæmorrhagica ; Pleuritis effusa ; Broncho-pneumonia lobularis ; Myocarditis parenchymatosa ; Trachietis et bronchitis catarrhalis purulenta.

Dr. Billings has also endeavoured to prepare a vaccine from pure cultures of the bacteria, but as the method is not completed to his satisfaction, I am not at liberty to mention it. Nevertheless, he has at present fifteen hogs under one year old which he has rendered immune to a virus of the first culture. Dr. Billings had no opportunity of testing the above animals by natural infection until October 27th, when a severe outbreak of Swine-plague occurred in the vicinity of Lincoln among some hogs recently imported from Iowa, among which he has placed the above-mentioned animals, and naturally awaits the result with some amount of anxiety.

This affected herd was placed at the doctor's disposal to do as he pleased, there being seventy-five hogs in it. At the present time they are dying at the rate of three or four per diem.

We have been making autopsies daily upon dead ones, and also on one or two we have killed, and found lesions in some, which go to show they must have brought the disease with them. One very acute and extremely characteristic case was at our disposal on the 26th of October, the autopsy of which offers not only some very characteristic lesions, but also in a very severe form. I have taken the liberty of bringing specimens with me, and will now describe the results of the autopsy held on a hog, October 26th, 1886. Subject, large hog about nine months old ; colour, black, and in fair condition. Around the head were to be seen some tumefactions, characterised by being even darker than the skin of the hog, and of a bluish-red shade. Along the abdomen were numerous dark blue-red spots, which terminated diffusely in surrounding tissue. On cutting through the skin, the paniculus adiposus was marked by numerous diffuse reddish-blue spots, and a dark blue-red fluid flowed from the cut blood-vessels. The abdominal cavity contained about two quarts of a straw-coloured fluid, in which numerous flocculi floated ; large intestines agglutinated together with a quantity of flocculent lymph, and their surface very irregular and distended by immense masses of hard, smooth, round-shaped bodies, as large as medium-sized potatoes. The small intestines presented a diffused reddish appearance, interrupted by numerous dark red spots ; peritoneum swollen, cloudy, and covered with immense numbers of bluish-red ecchymosed spots ; liver greatly swollen, edges rounded, but peritoneal covering normal, and through it you could see numerous irregularly-formed yellow spots of various sizes. On cross-section of same it was seen to be of a greyish yellow-red colour, the acini being enlarged and of the same colour, though yellow predominated. The gall-ducts were distinctly visible in the interstitial tissue, which was also swollen. The gall-bladder was distended, and contained a viscid yellow fluid ; spleen intensely enlarged, sixteen inches long, three and a-half wide at superior end, and a quarter of an inch at inferior end. Since this autopsy was made we have found a spleen twenty inches long and of proportionate thickness. The pulp

was disintegrated, and formed a dark bluish-red semi-fluid mass. The trabiculæ were swollen and distinctly visible through the capsule; Malpighian corpuscles enlarged and very marked; thoracic cavity (the cavity on the right side) filled with a dark red fluid, and the right lung was adherent to the ribs; both the pleuræ costalis and pulmonalis were marked with numerous ecchymosed spots, and similar spots were present on the pericardium; pericardial sac distended with a dark red fluid, and the visceral folds of the pericardium were marked by numerous dark red ecchymosed spots. The myocardium was of an opaque yellowish-grey colour, and very friable; right ventricle was distended, and the walls of the left ventricle hypertrophied. The endocardium was covered with numerous ecchymosed spots; the auricular ventricular valves shrunken and covered with numerous vegetations; bronchial lymphatic glands enlarged and juicy, the parenchyma being marked by numerous dark red spots, which gave to the cut surface of the gland an appearance somewhat resembling strawberries.

The surface of the lungs was marked by numerous dark red spots, from the size of a silver dollar to that of a pin's head, which extended beyond the surface of the lung and often corresponded to a single lobulus.

Numerous large centres of hepatisation complicated the right lung, the base being one solid mass. Smaller ones were to be found in the left lung. On one section an aqueous bloody fluid flowed from the surface of the cut lung, which presented a peculiar gelatinous, glistening appearance in some parts, while others were dry and caseous; numerous lobuli were of a dark red colour and represented hæmorrhagic infarction of bronchial origin.

*Abdominal cavity.*—The mesenteric lymphatic glands were swollen, and marked by numerous dark red spots, already described in regard to the bronchial glands.

*Stomach.*—Cardiac portion covered with numerous papillary outgrowths stained a yellow colour. The mucosa was intensely swollen with marked rugæ, half an inch in height, and on the crests of these folds were numerous follicular ulcerations. Numerous ecchymosed spots were dispersed throughout its internal surface. On approaching the pylorus the mucosa was covered with a viscid, yellow fluid.

*Small intestines.*—(a) Duodenum: contents were of a yellowish colour and fluid, mucosa swollen, and numerous dark red spots scattered throughout its course, with ulcerative erosions also present. (b) Jejunum was of a dark blue-red colour, resembling the so-called eel-skin of Rinderpest. (c) Ileum presented the same appearances, but Peyer's patches were swollen and marked by numerous hæmorrhagic spots.

*Large intestines.*—(a) Cæcum: contents of anterior part semi-fluid, and soon became hard, forming balls, which extended to the rectum. The entire mucosa of the large intestine was swollen and of a dark red colour, and marked by numerous hæmorrhagic ulcerations of various dimensions. The ileocæcal, or valve of Bauhini, was swollen and covered with petechial spots. About six inches from the valve a very large, ragged-edged, tumefied ulceration of a black red colour was to be seen, one and a half inches in diameter, having an infundibuliform character. Numerous smaller ones of a similar character extended throughout the mucosa of the large intestine.

*Kidneys.*—Nine inches long, three inches wide, and one and a half inches thick. On cutting through the vascular connections a large quantity of a dark red coagulated fluid oozed out. The capsules were non-adherent. The cortex was opaque, and of a pale grayish red colour, interrupted by numerous dark red spots of various sizes. Medullary substance was of a dark red colour, the vasi recti being distinctly visible. The pelvis was filled with a dark red coagulated mass, which was attached to the mucosa, the superficial and deep inguinal glands enlarged and covered with numerous black spots.



*Diagnosis.*

Peritonitis hæmorrhagica petechialis ; Acites abdominalis ; Enteritis ulcerativa hæmorrhagica ; Splenitis parenchymatosa hæmorrhagica ; Hepatitis parenchymatosa et degeneratio adiposa ; Nephritis parenchymatosa hæmorrhagica et degeneratio adiposa ; Lymphadenitis parenchymatosa generatis hæmorrhagica ; Pleuritis effusa et adhesiva hæmorrhagica ; Broncho-pneumonia hæmorrhagica et caseosa ; Tracheitis et Bronchitis effusa et hæmorrhagica ; Laryngitis ulcerativa ; Pericarditis effusa et hæmorrhagica ; Myocarditis parenchymatosa et degeneratio adiposa ; Endocarditis hæmorrhagica et valvularis nodosa ; Gastritis catarrhalis et parenchymatosa hæmorrhagica ; Causus morbi ; œdema pulmonum.

An examination of the blood, secretions, and tissues of this animal, gave the characteristic bacteria, which also developed in cultivations from the spleen. It should be mentioned that all of the sick hogs in the herd, from which this came, were characterized by the most obstinate constipation, and that the popular name, "Hog-cholera," is not therefore a suitable nomenclature for this disease, for which the name "Swine-plague" is much more appropriate, though that given by Klein seems to correspond more exactly to the pathological lesions. Hence, I think, that veterinarians should speak of it professionally as pneumo-enteritis suis contagiosa.

As to whether it is a contagious or infectious disease in the strict sense of the term, there is still room for some doubts, for, according to Dr. Billings' views, *a strictly contagious disease is one which has its origin, so far as we know, in an animal organism of a given species, and never outside of it ; but may be transmissible from animal to animal of the same species, and in some cases to others, such as Glanders, Rabies, Syphilis. A strictly infectious disease is one found in a locality in which an animal organism has to be in or go to, in order to be infected. The infected animal cannot transmit the disease to other animals, but can carry the infectious elements in its body, and thereby infect other localities through its excretions, which may then become centres of infection to other susceptible animals, such as Texas fever, Cholera, Anthrax, Yellow fever.* There is some evidence that Swine-plague may belong to the latter class. In an autopsy made on the 28th October, 1886, we found the lesions almost entirely restricted to the organs of the thoracic cavity and the throat, with the exception of a slight swelling and redness of the mucosa of the alimentary tract, although the various lymph-glands of the abdominal cavity presented the appearance above described. The stomach, however, presented the most serious pathological lesions which we have yet seen, its walls being much thickened and extending into the cavity in deep folds. Over an inch high, on the top of these folds, and between them, were numerous ulcerations, covered with diphtheritic masses of a yellowish gray colour, and numerous hæmorrhagic centres were dispersed throughout. The same bacteria presented themselves again in this case. By your permission and hoping I am not imposing on your patience, I will now describe the method we employ to demonstrate the presence of the bacteria in hardened specimens. It is by a system of double staining as follows : You can use either gentian violet or methyline violet, but for this organism I prefer the latter. Take a small porcelain dish, fill it half full of methyl violet and an equal quantity of caustic potash 1 to 10,000 of water ; both of the above must be carefully filtered to guard against germs in the same.

Take a very thin section of your tissue and put it into the above-mentioned dye for twenty-four hours. From this it goes into Gramm's solution of iodine for five or ten minutes. The solution is prepared as follows :—Distilled water one hundred per cent. ; iodide of potassium one per cent., and crystals of iodine one-half per cent. ; the above has the power of fixing the colour in the germs.

Now take the section and fade out until it acquires a light blue colour in one per cent. hydrochloric acid alcohol; from this the section goes into sixty per cent. alcohol, and then into an aqueous solution of eosin, and leave for about one minute. Now put it into ninety per cent. alcohol, then into absolute alcohol, and lastly into oil of cedar for examination, and you will find in a properly coloured specimen that the tissues are coloured red, and the bacteria, if present, of a deep azure blue with pale centres. In passing the section through this series of alcohols, great care must be used not to leave them immersed too long, as by so doing you will destroy the appearance of the bacteria, and render their recognition, even to an experienced eye, an impossibility.

In conclusion, there is one problem that is of great practical interest to the veterinary profession, both in this country and abroad. That is, whether the disease in England described by Klein as "Pneumo-enteritis contagiosa," and that described by Schutz of the Berlin Veterinary School, as an "Infectious pneumonia," commonly known as "schiweine seuche," and that which I have described, and is known in this country as "Hog-cholera" or "Swine-plague," are due to one and the same micro-organism; or whether these two apparently so similar organisms in their external characteristics, still differ in their pathogenic action sufficiently to account for the enterical lesions in the American disease, which Schutz does not mention having seen in Germany, though they correspond to those described by Schutz in all their chief essentials.

It must, however, be mentioned that Prof. Schutz's examinations were limited to a very small number of animals at the time they were reported. On the other hand, it may perhaps be assumed or demonstrated in the future that climatic influences have intensified the action of the micro-organism in America, and that the disease was brought to this country by imported hogs. Again, it is a well-known fact that the swine of this country and England are much finer bred than those of Germany, which ought to indicate that our swine are more susceptible to the action of the micro-organism than those of Germany, and opens a large field for future research. Dr. Billings expects shortly to be favoured with a supply of virus from Prof. Schutz, which he intends to pass through a long series of American hogs, and thus demonstrate whether the virus increases in virulence or becomes attenuated, and what lesions it produces. In two autopsies, which I made November 4, in which both animals died of *Œdema pulmonum et glotidis*, the lesions of the liver, kidneys, etc., were the same as usual, especially the lymphatic glands. The large intestines in both cases were free from any ulcerative lesions. There were to be seen upon the small intestine a dozen or more yellowish red and blackish spots of variable dimensions, which were hard to the touch, and on close examination of several of them, they either penetrated the serosa or approached to it. Upon cutting open the intestine, which in one case was of a pale lead colour, and in the other stained yellow, numerous round worms, from one inch to ten, and fourteen in length, were seen to be attached to these indented localities, the papilla of the parasite extending into an infundibuliform opening in the mucosa, which in all probability corresponded to the mouth of a gland or follicle, around which the tissues were swollen and indurated in a sharply circumscribed manner. Many of these places were the seat of more or less hæmorrhage; in others, which the worms had apparently left, was to be seen an umbus or circle of a greyish-yellow colour, upon which lay, and was attached, a black mass of about the size of a segment of a small pea. In the middle of the mass was a small pit or indentation which corresponded to the place where the worm had been attached. In some cases this black mass was in a process of exfoliation. These objects have the strongest if not an exact resemblance to those often seen in the



large intestine in Swine-plague, and might lead an uninitiated, unobservant, and non-reflecting person to look upon as a case of simple Pneumonia in a number of a herd of hogs in which he should observe and feel the above lesions, without at the same time making a careful examination of the contents of the intestine, or especially if the worms should be absent, as cases of Swine-plague; but an examination of the other organs, especially the lymph glands, and, above all, a microscopic examination for bacteria, would soon correct the hypothesis. It should, however, be mentioned that another essential point in the differential diagnosis between these objects and the neoplastic growth in the large intestine in swine-plague, is the tendency to, or actual penetration of, the walls of the intestine which occurs in the former and not in the latter. This experience goes to show that neoplastic and necrotic products of this circumscribed character are not peculiar to Swine-plague, and in either case are due to parasitic irritation, but it should not be forgotten that those due to the ascaridæ are invariably situated in the small and not the large intestine. Dr. Cobbold in his work on Entozoa describes this parasite as "*ascaris suilla*." He says it is closely related to the *ascaris lumbricoides* of the horse, and by some thought to be the same. Their habitat is the small intestine, sometimes in the stomach; they perforate the intestine and have been known to migrate into the cavities of the body, and also to be the cause of cystic abscesses, colic, epilepsy, and other nervous affections. They resemble the common earthworm in size; males are four to six inches long; females ten to fourteen; body marked by numerous transverse rings, attenuated toward either extremity; anterior terminating in a well-developed tripapillated mouth. Posterior in a blunt pointed tail. Female much broader than male; diameter quarter of an inch. Male has a double speculum or penis, and caudal extremity of male has an arcuate form; female organs situated towards the lower part of the anterior third, which frequently bursts after it has been placed in water.

I wish here to publicly express my thanks to Dr. Billings for his kindness and unselfishness in allowing me the use of his records of experiments, autopsies, and other articles necessary for the compilation of this paper, especially as it is rather rare for an original investigator to allow his assistant to have the honour of making the first publication of his work.

The Doctor authorised me to say that he himself will make no publication until the work is completed, including the pathology of the disease. And, now, gentlemen, I wish to thank you for the patience with which you have listened to my somewhat lengthy paper.

## Reviews.

A TREATISE ON THE DISEASES OF THE OX; BEING A MANUAL OF BOVINE PATHOLOGY. By J. H. STEEL, M.R.C.V.S., A.V.D. Second edition. (London: Longmans, Green, and Co. 1887.)

A new edition of Mr. Steel's well-known and most useful work on bovine diseases, has enabled him not only to correct the trifling inaccuracies which existed in the first edition, which was issued only six years ago, but to bring its contents up to the requirements of the present day. In the comparatively brief interval which has elapsed, great advance has been made in general pathology, as well as in the pathology of certain maladies to which cattle are liable, and these new views and facts have all been duly re-

gistered by Mr. Steel, who has made his book the most complete on the subject of any published in English, or perhaps any other language. For the student, no less than for the busy practitioner, the work deserves the strongest recommendation because of this completeness, the careful descriptions, and the explanatory and numerous illustrations.

THE FARMER'S VETERINARY ADVISER: A GUIDE TO THE PREVENTION AND TREATMENT OF DISEASE IN DOMESTIC ANIMALS. By J. LAW, F.R.C.V.S. (Edinburgh : Thomas C. Jack.)

When this work was issued some years ago we had great pleasure in reviewing it, and expressing a very favourable opinion of its merits. The able Professor of Veterinary medicine in Cornell University had given farmers a most valuable handbook of the diseases and injuries to which their animals are liable, with details as to appropriate treatment. We cannot discover whether the work before us is a new edition, or merely a reprint in this country, but conclude it is the latter, as there is apparently no alteration or improvement in the text, the advances made in our knowledge of some of the maladies—as Anthrax—since the book was issued in America, being unnoticed. Nevertheless, the "Adviser" possesses all the merits which should be found in such a production, and which we have already pointed out in our notice of the first edition.

IBID. Eighth Edition. (Ithaca : Published by the Author. 1887.)

This is the eighth edition of the above work published in America, and in every way it is worthy of the reputation of its distinguished author. Unlike the edition just published in Edinburgh, this comprises all novelties with regard to diseases of the domestic animals up to the commencement of the present year, and is about as complete as such a manual could well be. There are many illustrations, and the descriptions, if brief, are clear and simple. For veterinary and agricultural students, and even for veterinary practitioners, the volume may well serve as a text-book and guide.

PLANTS REPUTED POISONOUS AND INJURIOUS TO STOCK. By F. M. BAILEY, F.L.S., and P. R. GORDON. (Brisbane : J. C. Beal. 1887.)

Queensland, like nearly all our other Australasian colonies, is, to a large extent, a stock-raising colony, and great attention is devoted to keeping the cattle and sheep free from diseases, either contagious or due to food, water, or other causes. The immense tracts of pasture land on which the herds and flocks feed contain many plants besides those which may be classed as food plants, and many of them are either poisonous to stock, or injurious from their indigestibility. Mr. Bailey, who is the Colonial Botanist, and Mr. Gordon, Chief Inspector of Stock, set themselves the task of classifying in a brief account these deleterious plants, and have published the result of their labour in a handy volume. The plants referred to are described in a popular manner, and an excellent full-page lithograph is given of each to facilitate identification. These drawings are by Miss Hope, and strike us as being well executed. The



manner in which the book has been produced does credit not only to the authors but to the colony, and we may add that it has been printed by authority of the Honourable the Colonial Secretary.

TABLES OF VETERINARY POSOLOGY AND THERAPEUTICS. By G. A. BANHAM, F.R.C.V.S. (London: Baillière, Tindall, and Cox. 1887.)

In a neat little book, which could almost be carried in the waistcoat pocket, Mr. Banham has contrived to include a great amount of useful information relating to veterinary posology and therapeutics, and tables of weights, measures, those for regulating the doses of medicines for young animals, as well as a table of officinal and veterinary formulæ, one of the general classification of medicines according to their influence on the organs and structures of the body, one of agents arranged according to their therapeutical action, one of diseases and their remedies, one of solubility of drugs, one of thermometry, one of utero-gestation, and one of dentition. Mr. Banham's well-known skill and care are a sufficient guaranty of the correctness of the contents of the wonderful booklet, which is really *multum in parvo*, and must have cost him much time and labour in selecting, condensing, and arranging his materials. It will be found of great value in the pharmacy and in every-day practice.

THE HORSE, COW, AND DOG, WITH ANIMAL CHARACTERISTICS. HINTS ON THE BREEDING AND REARING OF FARM ANIMALS. By T. WALLEY. (Edinburgh: Turnbull and Spears. 1887.)

These two little productions by the principal of the Dick Veterinary College do not need much notice. The rhymes on the horse, cow and dog come scarcely within our line of criticism, and even if they did we fear we could not say much for them. We are reminded of Androcles and his leonine attendant by a few lines commencing—

“ A lion in his foot did get  
A cruel thorn, which made him fret  
And *hobble* very sore.”

The horse's troublous life begins —

“ A long-legged, guileless colt  
My mother brought me forth upon the  
Grampian hills.”

which again reminds us of Home's tragedy of Douglas—

“ My name is Norval, on the Grampian hills,” etc.

The cow proclaims—

“ A harmless, innocent, and lively calf,  
I first saw light near Winder's classic lake ;  
And as I played around my loving dam,  
I thought not of the troublous time  
That, far ahead, for me did stretch.  
For just five years I passed a quiet life,  
Fulfilling all the duties that do appertain  
To female members of the bovine race.”

while the dog volunteers the statement—

“ A roly, poly, helpless little lump,  
 I first heard worldly sound in Edin's classic town,  
 And after nestling close in bed, so soft and warm,  
 In just nine days I did my sight obtain ;  
 And then with eyes amazed I glanced around,  
 And saw the wondrous form of her who gave me birth.”

The animal characteristics are included in a lecture delivered at the Leith Sailors' Home, and are more acceptable and understandable than the poetry, which leaves us in a rather indefinable state of mind.

In the other little work, Professor Walley shows that he is more at home in the farm-yard than on Mount Parnassus, where his animals relate their history in such extraordinary language and string-halty rhyme. It consists mainly of a paper read at the Fife Farmer's Club, on the breeding and rearing of animals, and contains much which breeders and rearers of stock should store up in their memory and apply in their vocation.

## **Proceedings of Veterinary Medical Societies, &c.**

### ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD OCTOBER 12TH, 1887.

Sir HENRY SIMPSON, President, in the chair.

*Present*.:—Professors Brown, C.B., Duguid, McCall, Pritchard, Robertson, Walley, Williams; Dr. Fleming, C.B.; Messrs. T. Briggs, R. Cartledge, T. Campbell, J. S. Carter, J. Roalfe Cox, E. C. Dray, T. Greaves, W. F. Mulvey, J. F. Simpson, T. Taylor, F. W. Wragg, W. Whittle, W. Woods, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the previous meeting were taken as read.

The SECRETARY read letters from Sir Frederick Fitzwygram and Mr. Simcocks regretting their inability to attend.

The SECRETARY announced that “The Calendar of the Durham College of Science” had been received as a donation to the library.

A vote of thanks was passed to Mr. James Blakeway, of Stourbridge, for the gift to the College of a cow's heart showing Pericarditis to an extraordinary extent.

The SECRETARY announced that a letter had been received from a gentleman who was desirous of coming up for his Fellowship again. He came up in 1883 and was rejected. He paid his entrance fee of five guineas, and he wanted to know whether he could come up again without any entrance fee.

It was agreed that this gentleman should be allowed to come up on payment of his fee, and being recommended in the usual way.

Another letter was read from a graduate of Columbia Veterinary College, asking whether the diplomas of that College were recognised by the Royal College of Veterinary Surgeons, England.

Professor WALLEY said he had had applications from various colleges in America and Canada, and he thought it was high time that it should be determined what colleges were to be recognised.

Professor WILLIAMS moved that a committee consisting of the President, Professor Robertson, and Dr. Fleming, should be appointed to consider the



question of what colleges should be recognised by the Royal College, and that this application should be referred to that Committee.

Professor MCCALL seconded the motion, which was carried.

Professor WALLEY asked what course had been taken in regard to his letter containing a resolution that in the future in the Scotch schools there should only be two examinations every year instead of three.

The PRESIDENT said that the matter was dealt with in the report of the Examination Committee. It was decided that it should be referred to that quarterly meeting, but in consequence of the expeditious manner the Committee had performed its work, he (the President) thought that no further action would be necessary in regard to the letter.

Mr. J. F. SIMPSON asked whether the recommendation of the Committee which was presented to the Council on the 14th of June had been forwarded to the Lord Provost of Edinburgh, and if any reply had been received.

The SECRETARY said that the letter was sent.

The letter containing the resolution of the Council was then read as follows:—

“In considering the report from the Trustees of the Dick College, dated 25th March, 1887, and the Chief Constable's report of the 24th February, 1887, with reference to the veterinary students' disturbance in Edinburgh on the 14th and 15th January last, and the evidence adduced in support of their statement, also having regard to the importance of a settlement of the matter in dispute, the Committee recommend ‘That a Court of Inquiry be appointed consisting of representatives from the Trustees of the Dick Veterinary College and the Council of the Royal College of Veterinary Surgeons—an equal number on either side.’ The Committee suggest that no member of the Court of Examiners or person connected with either of the schools be appointed to act on this Court of Inquiry.”

The PRESIDENT announced that as yet no answer had been received to that communication.

*Report from the Court of Examiners.*

The SECRETARY read the report and the result of the examinations in Edinburgh.

Mr. DRAY moved its adoption.

Mr. WRAGG seconded.

Professor WALLEY moved that it be not adopted. They must be all perfectly aware that in Scotland they were desirous of having only one or two examinations in the year, at Christmas, and in May. If the recommendations in this report were adopted, it meant that a man who was relegated in May for nine months would not be able to come up again until the following May, so that the examinations would be put off indefinitely, and the curriculum prolonged. He thought it was hard students should be relegated for so long a period. He remarked that some of the men who had received “bad” marks at each examination were put in the same category with men who had received “sufficients,” and some even “goods.” He thought that alone was one reason why these recommendations should not be carried out. He thought there had already been a sufficient number of relegations, and that it was time the students were given a chance. He moved as an amendment, “That the part of the report which refers to the relegation of students be not adopted.”

Mr. GREAVES seconded.

Dr. FLEMING said that the terms of the recommendation were that the relegations should be for a term of not less than nine months. The Examiners had taken the whole matter into their most serious consideration.

Professor WILLIAMS said he regretted very much that the Board of Examiners had taken such a position in regard to these relegations. It did

not apply to Scotland alone, and he would be very glad indeed to see the rule expunged altogether.

Professor PRITCHARD thought that it could not amount to relegation if the students were allowed to go up for the next examination. They thought they were dealing leniently with them in only giving them nine months.

Professor McCALL suggested that Professor Walley should withdraw his amendment, as it was a pity to divide the Council on this question.

Professor WALLEY considered that circumstances did not justify him in taking that course.

Professor PRITCHARD thought it was easy to explain why a student got a "sufficient" or even a "good" in a subject at one examination, and then a "bad" in that subject at the next. Everyone who was acquainted with examination would know that it was only natural that when a student had obtained a "good" or a "sufficient" in one subject and had failed in another, he should leave the subject in which he had obtained a "sufficient" or a "good" in order to study the other subject.

The following amendment, being the previous amendment with verbal alterations, "That the Report of the Court of Examiners be adopted, except that the students be relegated to January, instead of nine months," was then put.

Six voted for the amendment and eleven against. It was therefore lost by a majority of five.

The original resolution was then put, "That the Report of the Court of Examiners be adopted," seven voting in its favour, and three against, being carried by a majority of four.

The SECRETARY announced that there was various correspondence which it was agreed should be referred to the Registration Committee.

Complaints had been received that a person practising in London had recently described himself as a licentiate of the Royal College of Veterinary Surgeons, when before the Lords' Committee on Rabies.

It was moved and carried, "That the solicitor be instructed to satisfy himself that the person did so report himself, and if he is satisfied to take proceedings."

#### *Finance Committee.*

The SECRETARY read the report.

Mr. DRAY said that the Committee thought that it was high time some action should be taken with regard to their finances, and proposed that only 200 copies of the "Register" should be printed.

Mr. TAYLOR moved that only 200 copies should be printed.

The motion was seconded by Mr. CARTER and carried.

The PRESIDENT said that he had intended to make a recommendation that, between the present time and the next quarterly meeting in January, the Finance Committee should take up the whole subject of finance, tabulating their ordinary income and expenditure, and their extraordinary income and expenditure. One of the questions also to which they should turn their special attention should be the extinction of the College debt. It would be a good thing for the Council to authorise the Financial Committee to prepare a special report, to be presented to the Council in January next.

It was moved by Mr. DRAY and seconded by Mr. TAYLOR, "That the Finance Committee be requested to undertake the examination of the finances of the College, and make a special report in the month of January."

The motion was carried.

Mr. DRAY moved the adoption of the Financial Report, and that cheques should be drawn to meet their liabilities.

Mr. WRAGG seconded the motion, which was carried.



*Obituary.*

The SECRETARY read the Obituary List.

Mr. DRAY moved that a vote of condolence and sympathy should be sent to the family of Mr. Mayer, who was a well-known and distinguished member of their profession.

Professor ROBERTSON seconded the motion, which was carried.

The PRESIDENT said he could not allow the opportunity to pass without adding this information, that Mr. Mayer was the first who had subscribed to the fund for building their present College.

*Examinations Committee.*

The SECRETARY read the Report of the Examinations Committee, as also a letter of Professor Walley's, in reference to the Scotch examinations.

Professor WALLEY complained that all his questions had not been satisfactorily answered.

The PRESIDENT, in answer to Professor Walley, said he thought he was right in saying that there was no power to anyone to demand admission to the examining room.

Professor WALLEY asked whether, according to the Report, teachers in the future would not be allowed into the examining room, as they had hitherto been allowed to do so.

The PRESIDENT replied that they had no power, but as an act of courtesy and favour the Examiners did invite them.

Mr. TAYLOR then moved, "That the Report be adopted."

Dr. FLEMING seconded the motion, which was adopted.

Professor WILLIAMS moved the following resolution, based on a paragraph in the Report:—"That the question of the inspection and the legality or right of individual members of Council to refer to the books of the Council at any time be referred to the Solicitor."

The amendment was put to the meeting and carried.

*The New Rules of Examinations.*

The discussion of the proposed New Rules of Examinations as agreed to by the Examination Council was then proceeded with, copies having been printed and forwarded to the Council some days previously.

The Rules for the General Examination were all passed with verbal alterations.

On the Rules for the Professional Examinations being discussed, Rules 1 and 2 were passed.

Rule 3 was passed as follows: "There shall be not less than two Examiners at each table."

Rules 4 and 5 were passed with slight alterations.

Rule 6, after a long discussion, was passed as follows: "At the Final Examination a student shall be examined in Morbid Anatomy and Pathology (one table, two Examiners). Diseases of the Horse, including Veterinary Medicine, Surgery, Therapeutics, Materia Medica, and Toxicology (one table, two Examiners). Diseases of the other domesticated animals, including Veterinary Medicine, Surgery, and Therapeutics (one table, two Examiners). He shall also undergo a general practical examination in regard to horses, in writing certificates and prescriptions, and in dispensing medicines, before two Examiners; likewise undergo a similar examination with regard to the other domesticated animals, before two Examiners."

Professor MCCALL moved the following: "That the final or C Examining Board shall consist of two sections, the first to conduct the Oral, and the second the Practical, and that their awards be disjoined. Each student who

has successfully passed the Oral sections shall be allowed to present himself for the Practical, but should he fail in the Practical it shall be optional on his part to remain at college or to engage in practice during the interval betwixt his rejection and the following examination, but in every such case the student shall produce a certificate signed by the member of the Royal College of Veterinary Surgeons with whom he has practised, and it shall also be attested by the Principal of the College with whom he has studied." By the regulation they were seeking to pass in Rule 6, five Boards of Examiners would be constituted, six Examiners conducting the Oral and Theoretical, and four conducting the Practical. He thought it would be a very difficult matter indeed for the students to satisfy all these. What his proposal embodied was that a student, having passed successfully a difficult examination in the Oral and Theoretical subjects, should then be allowed to pass on to his Practical, and should he fail in that, that he might either remain at college for further instruction, or that he might go out and engage in practice with a practitioner, a member of the Royal College of Veterinary Surgeons. He had consulted a great many on the subject, and the bulk of them agreed with him.

Professor WILLIAMS seconded the amendment. He thought such a change as was proposed would add greatly to the welfare and prosperity of the veterinary profession. He felt quite convinced that they would have better practical men if they adopted that system of examinations.

Mr. J. F. SIMPSON said that now we had an admission by the representatives of the schools that the veterinary surgeon was capable of importing practical knowledge to a pupil. Compulsory pupilage before entering the colleges had been condemned, but the suggested change in the rule was nothing more nor less than compulsory pupilage at the wrong end; if young men could not obtain sufficient practical knowledge at the schools to enable them to satisfy the Examiners he was opposed to asking them to seek it at the end of their terms of college study, far better that they should see practice before entering the school. He should oppose the proposed change.

Professor BROWN said that the matter had come before the Committee of Inquiry, who had gone into it and found that there was something to be said in its favour, and something against it, and had the Committee thought it desirable to adopt that section they would have failed to recommend it instead of the present rule.

Dr. FLEMING said he was entirely averse to the breaking up of the examinations. The great fault of the students of the present time was that as soon as they had passed their examinations they had done with the subjects. Pupils came to him who knew scarcely anything about anatomy. He thought that by splitting up the examination they would be opening a way for letting inferior men into the profession.

Professor BROWN said that it crossed his mind in listening to the statements of several gentlemen, that students, even if they forgot the theoretical part of the examination before they came up for the practical, would have many means during the few months they were in practice of refreshing their memory somewhat, and even if they forgot it altogether, was it not the wisest plan to adopt the best conceivable way of making them the best practical men? The practical men would in the future take the place of the theoretical, and he was compelled under the present circumstances to adopt the somewhat humiliating course of recommending practical teaching to the almost utter exclusion of theoretical teaching.

Mr. J. ROALFE COX said that after hearing the proposed alterations in the course of the final examinations for the diploma, he found that his interest in the profession he had endeavoured creditably to represent during nearly



## *Royal College of Veterinary Surgeons.*

forty years, warranted him in urging his opinion upon the consideration of the Council. He believed that the separation of the Practical from the final Oral examination in the way proposed would be most disastrous to the profession, as well as to the interests of the students. During the first year of such a course there might be two or three hundred or more young men cast on their own resources to seek opportunities of practice and practical instruction where they might. The schools being no longer under the obligation to provide them, he would like to ask where were there two or three hundred or more practitioners to meet this requirement? Each year would be multiplying the number thus thrown adrift to the utter wreck and ruin of their prospects in the profession in which they were embarked. The result of the course proposed could not be otherwise than to drag down their profession more and more in public estimation. It would also be disastrous to the schools and their interests in the long run, since, once released from the obligation to provide sufficient practical instruction, efforts would relax more and more, and prestige would proportionately suffer. If there needed further argument against separating the examinations for the diploma, they had it in the declaration of one professor who was present, and in the fact being endorsed by a second, that a pupil forgot in six months the subject in which he had once passed, and therefore it would be unfair to call on him a second time. It was urged as a reason for his being allowed to pass the Oral first, and then being released to prepare for the Practical, with the remark that if again he was examined in the Oral he would most likely fail. If that were the case he should like to ask the good of the examinations and the teaching at all. It was but human nature for them to consult their individual interests, and as with their friends now associated with the schools and teaching so would it be with any of them in their place. As the requirements of the examinations so would be the teaching. If by the direction of the "powers that be" the examination was fixed at "K," they might depend upon it that the teaching and study would never be set at "Q." It should not be dragged down, gagged, and emasculated to assimilate with the views and convenience of the teachers and their class. Withdraw the obligation on the schools to provide the necessary practice and practical training, and why should not fresh enterprise crop up in teaching? Why not schools of economic principles and reduced fees with an indoor clinique and practical class:—four walls and an upper story could house and stable the subjects for the practical work. A rocking horse, a stuffed dog, a chalk cow from the dairyman's window, and a woolly sheep on four wheels crying "Bah" on someone squeezing its stomach, might answer the requirements, but they would not be making veterinary surgeons in that way; they would not be maintaining their little hold on public recognition, nor would they be retarding the possible day when that building, now the Royal College, might become a parcels office for the Midland Railway. If they retrograded now they were lost. He viewed the position very seriously, as well as the contemplated changes. If the Practical examination had to be separated from the final Oral, then by all means let them take the Practical first, and until that had been passed defer the other, but he thought it was far better to have the two taken together.

Professor PRITCHARD said he gathered from the discussion that it was admitted all round that the man who passed the Oral would go into the country, and by the time he came back would have forgotten all about it. He would like to know what kind of a practical examination the student was likely to pass who had been in the country or elsewhere and totally forgotten the scientific portions of his examinations.

Mr. CAMPBELL supported Professor McCall's motion, which was then put and carried by a majority of two, 11 in its favour and 9 against.

It was agreed that the new rule should be numbered *pro tem* 6A.

Rules 7 and 8 were passed.

Rule 9 was, after discussion, passed as follows:—The President will be expected to attend the examinations once at least in the year at London, Edinburgh, and Glasgow.

Rules 10, 11, 12, and 13 were passed.

Rule 14 was expunged.

Rule 15 was passed, and Rule 16 also, with verbal alterations.

Rule 17 Professor McCall withdrew; an amendment to the rule was passed.

Rule 18 was passed with verbal alterations.

Rule 19 was passed as follows:—An Examiner in any one class shall not examine in any other; and in the final the Oral Examiners shall not examine in the Practical.

Rule 20, with verbal alterations, was passed.

Rules 21 and 22 were passed, and the discussion closed after a protracted sitting.

It was then moved and carried that the new rules now agreed on be suspended in the Board Room for three calendar months as required by the charter.

Mr. GREAVES gave notice of a motion for the next quarterly meeting.

Professor WALLEY proposed, and Mr. Woods seconded, a vote of thanks to the Chairman, which was agreed to.

#### ROYAL VETERINARY COLLEGE.

THE winter session commenced on October 2nd, Earl Spencer, K.G., occupying the chair during the proceedings.

There was an unusually large attendance, amongst those present being:—Lord A. Somerset, Colonel Allsop, Sir Jas. Tyler, Mr. Harpley, Dr. Fleming, C.B., Sir Henry Simpson, P.R.C.V.S., Professors Simonds and Pritchard, Professor Brown, C.B., and the whole of the Educational Staff.

The PRINCIPAL said: Acting upon the privilege we possess and which we value much, I have great pleasure in calling upon one of the Governors of this Institution to preside to-day. This nobleman requires no introductory remarks from me so as to secure for him a most hearty welcome, for the name of Earl Spencer is well known to the present generation of Englishmen in connection with many departments of national life and work, and not least with agriculture and with social science—departments which are more closely related to us as professional men than many others.

The CHAIRMAN, who was received with loud applause, said: As I shall have to trouble you later on with some remarks, I only rise now, on taking the chair, for the purpose of introducing to you the lecturer, Professor Lowne, who will deliver the introductory address.

The PROFESSOR said: My Lord, Mr. Principal, My Lords and Gentlemen, —I do not doubt that I may offer to your lordship the thanks of all connected with this College for your presence here to-day. By thus honouring us, you make us more than ever proud of this College; nor are we unmindful of the great benefits conferred by it on the veterinary profession and the public, nor of those arising from the more extended study of general pathology, in which all researches into the causation and symptoms of epizootic diseases not only confer an indirect benefit on the human race, by saving the lives of those animals which are so valuable to us, but also confer a direct benefit, for such researches tend strongly to increase our knowledge of the causation of human ailments.



When, by the favour of my colleagues, the honour of addressing you to-day was conferred upon me, I felt it incumbent that I should study carefully the history of this College, and the relations, past and present, of the medical and veterinary professions. For it occurred to me that it is just one hundred years since M. Vial St. Bel first visited England, and just one hundred years since the action commenced which I think I may say led to such a representative gathering as that which I have before me to-day, and to such a great boon to our country as this College affords. I do not speak lightly in saying this, for I think all will readily admit that the rise and progress of scientific veterinary practice in this country has been exceedingly rapid, and that the benefits accruing to the general and agricultural community have been proportionately great—greater than could have been reasonably expected when the condition of veterinary science, if it could be called science, in England, a hundred years ago, is taken into consideration, and greater than could be expected when the natural opposition of those who considered themselves competent to treat the diseases of animals, and the general want of knowledge on the part of the public, are taken into consideration.

The farrier, *ferrarius*, iron-smith, or shoer of horses, raised his voice against the innovation, secure as he then thought himself, in his innate knowledge, or rather want of knowledge, confident in his empiricism, and trusting to the ignorance and credulity of his employers. Scientific methods were stigmatised by him as theories, for which he had the contempt of ignorance, and theories in the minds of his patrons had no better reputation than hearsay. Yet I would venture to affirm that a man without a theory is like a mariner without a compass. To quote the weighty words of our Principal, "Theoretical knowledge renders the attainment, when opportunity offers, of sound practical information much easier, and clears the way of many difficulties;" and I would add that, in the bye-paths of science he who is without theory to guide him wanders aimlessly, and often ends where he begins. Even a bad theory is often better than none—it may be but a feeble light, but it is better than absolute darkness.

But to return from this digression. Amongst those who, seeing far into the future, initiated the movement which led to the foundation of our College, there is one name at least which was in itself more than enough to ensure success—a man who at that time was far less known and appreciated than his genius deserved, but whose memory is revered, whose work is now admitted by all to have been pre-eminent—the immortal John Hunter. That great man, that great light amongst men, found the time, in spite of failing health, even when he was most occupied in the active exercise of his profession, to urge the cause of M. Vial St. Bel. Mindful of the urgent necessity for such an institution as this, he directed his great genius in the cause of veterinary science towards the foundation of this College. That such a man should have exerted himself for our welfare must be regarded by all, the youngest as well as the oldest amongst us to-day, as an honour indeed.

With such a mighty spirit moving amongst the founders of our College success was inevitable. John Hunter was a large-hearted man, and I doubt not many large-hearted men were associated with him in so good a cause. The noble charger that champs the bit in the battle-field, the delicate thoroughbred, the hunter, petted alike by his generous master and his fair mistress, the patient oxen, and all the dumb domestic friends of man, appealed, mutely it is true, but no less forcibly, to the kind hearts of those who believed that such an institution as this was needed; and the founders of our College stood nobly by it, through long years—years of disappointment and opposition—but they were strong in their belief, and, as with all who are determined to succeed, success has crowned their work.

I will pass rapidly over the early troubles of this College which followed

the premature death of your first professor, M. Vial St. Bel—a man who had clearly many of the attributes leading to the highest success—troubles which, to use the words of England's greatest poet—

“Were naught else  
But the protractive trials of great Jove,  
To find persistive constancy in men,  
The fineness of which metal is not found  
In fortune's love; for then the bold and coward,  
The wise and fool, the artist and unread,  
The hard and soft, seem all affixed and kin;  
But in the wind and tempest of her frown,  
Distinction with a broad and powerful fan  
Puffing at all, winnows the light away,  
And what hath mass and matter by itself,  
Lies rich in virtue and unmingled.”

My lord, it is with pride that I speak of the next period in the history of this College, because it was by the genius, genial bearing, and perseverance of Professor Coleman, a member of my own profession, that your great enterprise advanced in public estimation and usefulness. He would, I opine, be an ungrateful and prejudiced man who, looking back on the past, would side with those who, in my humble opinion, were the enemies of the true cause, and who with little grace endeavoured to impute unworthiness to one who worked well and worked with a will for many years towards the advancement of veterinary science in this country—one who, even on the showing of his severest critics and enemies, was well beloved by his pupils.

To my mind it is inconceivable that petty jealousies should have arisen between two sister professions so knit together in a common cause, so unlikely to clash in interests, as the medical and veterinary, for are not the general principles of pathology all-important to both? Must not each profit largely by the work of the other?

As the barber gave up all claim to medical and surgical knowledge, except the insignia of his office, the bleeding staff, fillet, and basin, the very meaning of which are unknown except to the few, long before the claims of the shoeing-smith, *ferrarius*, or worker in iron, corrupted to farrier, were laid aside, it was natural and right that the elder profession should assist the younger. And as there are still many sciences which are far more advanced with those of my own profession, possibly from the greater number and greater leisure of her votaries, it is still right that they should, as far as possible, assist to their utmost a cause which is undoubtedly of the highest utility, and one which does honour to humanity.

I take it that one and not one of the least benefits, conferred upon the veterinary profession by this College, is the intimate and cordial relationship of your medical and veterinary professors. Nor are the benefits one-sided, for we of the medical learn much from those of the sister profession. In pathology there are rich stores of information ready to our hands, and if we neglected the opportunities which their work affords, the loss and blame would be ours.

In Germany the relations of the two professions have long been most intimate, and it is doubtless true that Germany is in advance of us, not only in this, but in many things connected with science and its application to practical work. But of late, I am happy to say, we have followed more closely the good example of our Continental *confrères*.

In passing I would, my lord, with your permission, address a few words more, especially to those who are now entering upon a course of study in these walls, and to those who are already students in our College. I would remind them that the time is passed when they have no other duties than the



mere earning of bread. They have serious responsibilities thrown upon them, both in the maintenance of the dignity of a profession, and the acquirement of the necessary scientific and practical knowledge for the proper treatment of their dumb patients.

The dignity of their profession requires that they should distinguish themselves by a gentlemanly bearing and courtesty of manner to all with whom they come in contact, added to which they should be studious and attentive, and, above all things, lose no opportunity of cultivating their powers of observation. To be a good observer is the only road to success in veterinary practice.

The cultivation of the power of careful observation is, I regret to say, greatly neglected in the ordinary education of a youth in this country. Even at our best public schools no attempt is made to cultivate the powers of observation. In this College, however, no such failing exists. Very wisely, I think, every opportunity is afforded to the younger pupils of cultivating a power of observation; their observant faculties are quickened by the study of botany, both in the field and the class-room. Perhaps some may say, or think, I am like the saddler, who asserts that there is nothing like leather; but, seriously, I know of no science which affords a better training for the powers of observation. It is by the ready appreciation of minute differences that the veterinary surgeon succeeds—minute deviations from health—and it is by the study of differences of gradually increasing difficulty that the botanist first learns to distinguish a group of plants—as, for example, the grasses from all others; and then, by more and more careful examination, one grass from another. The more complex and more difficult study of anatomy follows; and, lastly, the crowning work—the study of the symptoms by which various diseases differ.

To such subjects instruction in chemistry and the use of the microscope in pathological investigations are added, and these are all-important in their bearing on the after-life of the student; he learns dexterity in manipulation, and increases his power of grasping facts and scientific methods.

It is in the inculcation of care in investigation—accuracy of observation more than the mere committal of facts to memory—that such a course of instruction is valuable. It matters little that the facts themselves are often soon forgotten; the mental training which has resulted is invaluable in after-life.

I think, my lord, I have said enough to convince those who are about to enter the profession that a career of studious habits and the assiduous cultivation of a power of observation are all-important, and would add that if any amongst those who sit to-day for the first time in this theatre are doubtful of the serious duties they are undertaking—if there be such, it were better they applied themselves to some other line of life, for I believe the time is rapidly approaching, if it has not already arrived, when such as fail in a steady application to their work here, and in that dignity of conduct which is the sure mark of a gentleman, will fail to succeed in the veterinary profession.

My lord, there are other matters of the most vital importance which I would ask your leave to touch upon. Our knowledge of the causation and prevention of contagious epizootic disease has recently made great strides. The discovery of the existence of all prevailing organisms—microbes, as they are called in scientific language—better known, perhaps, as bacteria, bacilli, or germs, and the potency of these for harm, both to man and animals, has thrown a new light upon contagious epidemics and epizootics.

I need hardly remind you of the doubts which still perplex the minds of scientific men, for although the general principle may be said to be firmly established that contagious diseases generally are the result of the invasion of the living body and the multiplication within it of minute parasitic organisms, there is still doubt in the case of many diseases how far these agencies

are at work ; and although prevention is possible in some cases, at least, by a kind of vaccination or inoculation, either by modified or attenuated virus—that is, by fluids containing the parasitic organisms in a particular state or condition—the extent and nature of the protection afforded by such treatment is in many cases doubtful, whilst the methods are still open to various modifications.

It is obvious that such matters can only be set at rest by prolonged and careful experiments, extending over long periods of time. I am aware that such experiments have been recently carried out by our Principal and his staff, and that a distinguished German, Professor Schutz, has been working in our laboratory. But there is less activity in forwarding knowledge by such methods in this country than could be desired.

Lack of money set aside for such purposes is one of the causes of this. We are satisfied with spending £100 or £200 from time to time. In Berlin, on the other hand, no less than 250,000 marks, or about £12,500 a year, are granted to the veterinary college for such purposes, whilst in America large sums have been expended in work of this kind for the last ten years or more. Our own apathy and carelessness, to use no harsher term, is not worthy of the richest country in the world, and when such great monetary interests are at stake to take no higher ground is simply incomprehensible and much to be regretted.

There is also another check upon original research in this country—legislative interference, the so-called Vivisection Act. This Act, however well meant, is, in my humble opinion, much to be deplored, as great difficulties are thrown in the way of all experimenters—difficulties which can only be overcome partially by a few men of known scientific reputation, and not even by some of these ; so that original research into the causes of disease is seriously crippled in this country, where its usefulness is manifest, and where the interests of both man and the animals around him are paramount. Thousands of animals perish from such diseases as Anthrax, Rabies, Diphtheria, Consumption, and similar epizootics ; man himself forms a victim to similar epidemics, and yet such a mistaken policy throws every obstacle in the way of those who would fight the good fight against disease and death, even at times at the imminent risk of their own lives.

The address was frequently greeted with applause.

The CHAIRMAN, again rising, said : The task which I have to perform is, I am sure, a very easy one ; it is to return thanks to Professor Lowne for the very interesting, eloquent, and able address which we have just heard from him. He has touched on many subjects of great importance. I need not go into them now, but I fully endorse the general views which he has so ably placed before you. I think you will all agree with me in giving him our most hearty thanks for the very able and instructive address which he has just delivered.

The PRINCIPAL then read the prize list for the past session as follows :—

#### LIST OF MEDALS, CLASS PRIZES, ETC, AWARDED AT THE OPENING OF THE WINTER SESSION, 1887-88.

##### COLEMAN PRIZES.

Silver Medal	..	..	..	Mr. T. A. T. Hutton.
Bronze Medal	..	..	..	Mr. W. A. Dellagana.
Certificate of Merit	..	..	..	Mr. S. B. Baker.

##### CATTLE PATHOLOGY PRIZES.

Silver Medal	..	..	..	Mr. T. A. T. Hutton.
Certificate of Merit	..	..	..	Mr. E. R. McHugh.



SCHOLARSHIP.

£25 per Annum for Two Years	Mr. E. E. Martin.
Highly Commended .. ..	Mr. F. W. Greenlaw.

CLASS PRIZES.

Class C.

Hippopathology .. ..	{ Mr. J. A. W. Dollar.
	{ Mr. W. M. Reeman.
Cattle Pathology .. ..	Mr. E. R. McHugh.
Morbid Anatomy .. ..	Mr. E. R. McHugh.
Helminthology .. ..	Mr. J. A. W. Dollar.
Therapeutics .. ..	Mr. A. E. Branch.

Class B.

Anatomy .. ..	{ Mr. R. W. Knowles.
	{ Mr. W. H. Brooke.
Histology .. ..	Mr. W. A. Byrne.
Physiology .. ..	Mr. W. A. Byrne.

Class A.

Chemistry and Toxicology ..	Mr. E. E. Martin.
Materia Medica .. ..	Mr. A. J. Seath.
Practical Chemistry .. ..	Mr. E. E. Martin.
Botany .. ..	Mr. E. E. Martin.

CERTIFICATES AWARDED OCTOBER 3rd, 1887.

CLINICAL CLERKS.

Mr. Arnald, H. B.	Mr. Goodliff, G.	Mr. Moore, A.
Mr. Baker, S. B.	Mr. Goodwin, H.	Mr. Newsome, A. C.
Mr. Barcham, T. E.	Mr. Hall, H.	Mr. Patrick, W. G.
Mr. Beckford, T. L.	Mr. Healy, J.	Mr. Pettifer, T. V.
Mr. Branch, A. E.	Mr. Hutton, T. A. T.	Mr. Reeman, W. M.
Mr. Clarke, R. W.	Mr. King, H.	Mr. Sangster, A. E.
Mr. Clifford, W. A.	Mr. Legg, J. A.	Mr. Stidston, T. H.
Mr. Dellagana, W. A.	Mr. Lucking, T.	Mr. Watchorn, F. W.
Mr. Dollar, J. A. W.	Mr. Maccormack, H. A.	Mr. Wharam, S.
Mr. Exley, T. B.	Mr. McHugh, E. R.	Mr. Wilson, W. T.

MONITORS.

Mr. Barcham, T. E.	Mr. Goodwin, H.	Mr. Maccormack, H. A.
Mr. Bates, J. H.	Mr. Healy, J.	Mr. Moore, A.
Mr. Clarke, R. W.	Mr. Hutton, T. A. T.	Mr. Newsome, A. C.
Mr. Crapp, A.	Mr. Johns, A.	Mr. Watchorn, F. W.
Mr. Dollar, J. A. W.	Mr. Johns, C. A.	Mr. Wilson, W. T.

PROSECTORS.

Mr. Bates, J. H.	Mr. King, W.
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VETERINARY ASSISTANTS.

*Royal Agricultural Society, Norwich, 1886.*

Mr. Wilson, W. T.	Mr. Maccormack, H. A.
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*Smithfield Club Show, 1886.*

Mr. Hutton, T. A. T.	Mr. Dollar, J. A. W.
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Professor BROWN: Gentlemen,—If we were assembled round a festive board it would be my pleasant duty to ask you to drink a toast (laughter), but as we are engaged in the more serious business of inaugurating a session of what will, I hope, prove to be hard work, I must take the more official, but

to me no less pleasant, course of asking you to accord a vote of thanks to the noble earl who has taken the chair on this occasion. It has been my good fortune, gentlemen, several times during the last twenty years to be associated with Earl Spencer in his official capacity as Lord President of the Privy Council; and I do not hesitate for one moment to assert that no one more than Lord Spencer has exhibited more anxiety to further in every possible way the interests of the veterinary profession. I have had the pleasure of hearing him speak frequently to some of the members of that profession who are his personal friends, and I know that, whenever an opportunity has offered itself of legislating for the benefit of its members, the noble earl has never failed to take advantage of that occasion. Gentlemen, without hesitation and with the certainty that my request will be acceded to, I ask you to carry by acclamation a vote of thanks to the chairman of to-day.

The CHAIRMAN: First of all let me thank my friend and late colleague, Professor Brown, for the very kind way in which he has proposed this resolution to you; next I must thank you too for the welcome you have given me to the Veterinary College to-day. I have listened with the deepest interest to the able address which was given to us at the opening of your session. I have said a few words with regard to what I thought of that address. I believe some people are fond of saying they ought always to rise from their meal with a good appetite that will ensure them a good digestion. Well, the only thing I felt when the professor sat down was that I regretted extremely he had not continued his address a little while, for I was feeling the deepest possible interest in all he said. I sincerely wished he could have continued his remarks a little longer. Gentlemen, I cannot come before you with any claim for any scientific knowledge on the noble profession which you are about to enter. I have no such knowledge. But as Professor Brown said, I have been more or less connected intimately during a great many years with your profession, and I feel the deepest interest in it. If I may say so, there are two schools in this country which have to do with diseases: there is the legislative school to which I belong, and there is the school of the healing art of veterinary science to which you belong. Now, I believe that in this country, not only with regard to diseases of animals, but with regard to human diseases, a great deal has been done by the Legislature. It controls, to a certain extent, the education given in all medical science, and it regulates the diplomas which are held by medical men. With regard to human diseases, it interferes in such matters as enforcing vaccination, in enforcing regulations for quarantine, and in regulating drainage and sanitary matters of various sorts. But with regard to animals it goes a great deal further, for it enforces directly, and, if I may use a sporting phrase, it "poaches" on the ground of medical veterinary science. It takes possession bodily of the patients which might come under your care. Now, I for one will not for a moment say that legislative interference with diseases of animals can be stopped. The Legislature has very important duties to perform. It does them, not because, I presume, it distrusts the veterinary profession, but because it cannot afford to give time to the veterinary profession to try their skill on the valuable animals which may come under their care. It cannot afford to allow diseased animals to remain in the country. If it did that, it would give a greater opportunity for students of veterinary science to practice their art. If diseased animals were allowed to be brought into the country, the loss to the country would be very great. The Legislature, therefore, enforces the most summary and compulsory slaughter, particularly if they are foreign animals, and the strictest isolation when the disease exists in the country, by means of infected areas and places. I believe I may claim, without detracting from veterinary science, for this class of legislation great success during the last few years. Disease in this country among animals has greatly and enormously



diminished. No doubt veterinary science has had its share in this, but legislation, I think, has had a still greater share. While saying this, I will not for a moment detract from the profession which you are about to follow. I would like to see your profession take the place of and drive out of the field the Legislature, if it were possible. Perhaps some day it may be possible. I do not think it is possible yet; but I am afraid the legislative school does hinder the development of veterinary science in this country to a great extent. I should prefer to see science and learning take the place of the pole-axe, but I do not think we shall see that for many a day. At the same time you have a great field before you. I believe that the 95,000,000 of animals in this country offer an enormous field for your profession. We have heard the history of this College from the learned professor in his admirable address, and I think we may well be proud of what the Veterinary College has done.

Now, in former years there was great ignorance with regard to this art, but modern society does not tolerate ignorance in any art in teaching medical or surgical practice, and it will not tolerate it any longer in veterinary practice. (Cheers). Now, you have, as I said, a very noble profession before you; you have an immense field before you. I am sure you will be able to utilise the admirable opportunities which are given at this College by the learned professors who teach you. What you have to do is, not only to alleviate the sufferings of the dumb creatures which are given to the care and companionship of man, but you also have to husband and increase the material wealth of the country by making healthier and sounder the animals which form so large a part of the riches of the United Kingdom. (Cheers). That is your duty. I am sure you will enter into it with earnestness, energy, and ability. Here in London, for nearly a hundred years, you have had this institution, which not only has benefited veterinary science, but also the sister science of medicine and surgery. No more appropriate or able remarks were made in the address that we heard than those which implied the intimate connection between the two sister sciences. Now, as Professor Brown has told me, there are considerable differences in the proficiency of your profession with regard to particular diseases. You are more skilful in diseases connected with horses, and less skilful in diseases connected with cattle, sheep, and swine. It is not very difficult to imagine or find the cause of that. Horses are of enormous value in this country, but their utility only lasts as long as they are healthy and sound. Every inducement therefore is held out to men to study the diseases of horses, in order to bring them back to soundness and health when they are lame or sick. There is not the same facility with regard to cattle, sheep, and swine. There is such immense value connected with these that very often those who have animals falling sick cannot afford to treat them long, or keep them in order to see whether they are going to fall sick. They are obliged to turn their carcasses into money. They cannot afford to wait until remedies may be tried to cure them. This, I believe, accounts for the fact that most of the animals sent here for you to experiment upon are horses. This, I think, it will be very desirable to find some remedy for. There is a great opening for veterinary science with regard to the diseases of cattle. We will not take the Cattle Plague, which is such a terrible disease, but we will take merely a minor disease which does not often end in death—the Foot-and-mouth disease. No disease has caused greater loss in this country than that disease. You may imagine what is the loss to a farmer when the disease comes to a flock of ewes about lambing time, or to a grazier of fat cattle about to send to market. There is great inconvenience and loss through the sanitary regulations with regard to infected areas and places which the Legislature imposes on the district where the disease exists. Think what a benefit would accrue if you could find some

preventive like Jenner found for Small-pox, or some medicine which would overcome the losses incurred by this terrible disease. You would be conferring enormous benefit on the country, and diminishing losses which are continually coming upon the farmer. This is one of the objects you will have to study. You will have, as I have said, a noble profession before you—one worthy of men of the greatest ability and perseverance in the country. I sincerely trust that all those I see before me will go into their profession with that zeal and energy which it deserves, and I am quite sure you will be able to fulfil duties of a very high kind in your country, increasing not only the reputation of your country in the world, but the wealth and prosperity of England, if you succeed in your profession. I thank you, gentlemen, very sincerely for the kind way in which you have received me here to-day.

The proceedings then terminated.

### THE DICK VETERINARY COLLEGE.

THE Royal (Dick's) Veterinary College was opened on October 5th for the winter session by Lord Provost Clark.

THE LORD PROVOST, in opening the proceedings, said that sixty-five years ago Professor Dick, then a very young man, seeing the necessity of such a college, instituted the Edinburgh Veterinary College. Many of those present, not of the younger but of the older generation, remembered Professor Dick, and all of them knew the enormous energy of the man, his profound love for his profession, and his earnest desire that that profession should be advanced in every possible way. Professor Dick had a great many difficulties to overcome, but he overcame them, and to show his desire for the promotion of the veterinary science, he left by his will the whole of his property for the extension of new premises in the institution. Sixty-five years had elapsed since that time, and the records of veterinary science showed how fully the wishes of Professor Dick had been brought to pass. They were now about to make a new departure. They had in Dick's College perhaps the very best veterinary institution in the country. It was not only supplied with Professors than whom there were certainly none better in the country—but it had also every modern appliance that could advance veterinary science and so could produce a race of young men who should be incited not only by the knowledge they had obtained in the College, but by those humane principles which originally dictated the institution of veterinary colleges, and who would, he was sure, be useful in many different ways, not only throughout the country but throughout the world, in promoting a more kindly disposition towards those animals so closely associated with the human race. During the eight years after Professor Dick's death there were no less than three principals in the College, one after another, but since Principal Walley's appointment in 1871 everything had gone on in a very smooth manner, with the exception of the little conflict last year, which he was certain would very soon be forgotten. He was sure it was the desire of the professors and students of the College that all its proceedings and the behaviour of the students generally should be such as to commend them to the whole community. He had the very greatest confidence that the young men attending the College would show in the future, as they had done in the past, that they were actuated by a sincere desire to advance in their profession, and to conduct themselves in such a manner as to be a credit, not only to the profession, but to the city of Edinburgh. The year before Principal Walley was appointed there were only nine old students in the college, five of whom obtained the diploma from the Royal College of Veterinary Surgeons. Now that they had such a grand new building he was sure that veterinary science would advance in a much more rapid manner than ever it had done before.



Bailie CRANSTON, convener of the Committee of the Dick Trust, said Professor Dick's money had been of great benefit, and would be of greater benefit when his wishes were thoroughly realised, and the trustees were able to give more bursaries and greater encouragement to young men attending the College. When the expenses of the buildings were cleared there would be a balance for the advancement of science in the College. The professors and teachers were second to none, and it was to be expected that the College would turn out some clever fellows, who would put London and every other place in the shade.

Professor M'KENDRICK, Glasgow University (a former professor of the College), in the course of a few congratulatory remarks, said the time was past when there could be drawn any distinction between veterinary medicine and medicine as applied to human beings. They were really one and the same science, and he had no doubt that as veterinary science progressed, the intimacy between these two departments of professional work would become much closer than it had ever been. He believed there was still a great future for veterinary science in Great Britain. It was quickly, year by year, coming to the front, and its professors were taking their proper place amongst scientific men. He had no doubt that before many years were over veterinary science in general would be as highly specialised in this country as it was in France, Belgium, and Germany. The time had now come when, in this department of science, a young man should be willing to give himself unreservedly and wholly to the study of veterinary physiology. Veterinary colleges had depended quite long enough for the teaching of physiology upon the medical profession. In conclusion, Professor M'Kendrick urged the students to take a high view of their profession, to think of it as a calling in life in which they would be able to exercise the very kindest feelings of humanity, to think of it also as a walk in life in which they would be brought face to face with many of the problems of disease, and in which they would be able to contribute their share to the general advance of science. Those who were engaged more especially in the study of disease upon human beings now recognised veterinary surgeons as co-workers in the same great enterprise of the investigation and cure of disease.

Professor WALLEY, in the course of an address, sketched the progress which the College had made since his appointment, and said he would like to see a farm, and all connected with it, added to the College, so that students might get the benefit of seeing the animals in their natural condition. If possible, he would also like to see a residential institution outside the city where students could be accommodated with board and lodging, and have healthy air and exercise. He also alluded to the efforts made to obtain a Government grant in aid of the veterinary profession, and said that although they had not succeeded in getting it, it might come yet, and Government might see that the veterinary profession was as deserving of Government aid as any other profession.

Dr. AITKEN proposed a vote of thanks to the Lord Provost for presiding, and the proceedings terminated.

#### THE NEW VETERINARY COLLEGE, EDINBURGH.

THE fifteenth session of the New Veterinary College, Leith Walk, Edinburgh, was begun on Oct. 5th. There was a large attendance of students. Mr. John Waddell, Belford Park, Edinburgh, occupied the chair, and was supported by a large number of ladies and gentlemen.

The CHAIRMAN, who was received with loud applause, said the duty which he had been called upon to perform was one which he undertook with peculiar

pleasure, as he entertained the highest respect for their Principal, and had the best interests of their College at heart. Although he was not himself a graduate in veterinary science, he had all his life had a great deal to do with horses and other animals. Being an extensive breeder of Clydesdale horses, he was naturally interested in veterinary science, and he might say that he was not a little indebted to their Principal in connection with his own stud in Edinburgh and elsewhere. He did not think it was necessary for him to say much, as he was sure they were impatient to hear the opening address by their friend Professor Lewis. It was his hope that they might have a most successful session, and he was glad to hear that the number of students, new and old, was beyond that of any former year—and he had no doubt whatever that in these commodious premises, and with the appliances at their command, they would, or at least ought to, make good and profitable advances. The science of which they were the students was a most useful one, and it depended upon themselves whether it should become more so in future. In concluding, he had to assure them that he most heartily wished the College, its Principal, the professors, and the students all success during the ensuing session.

Professor LEWIS was received amid loud and continued applause, and in the course of his address said the College was founded in October 1873 under circumstances that were decidedly the reverse of auspicious. But in spite of all difficulties its career had—through the indomitable determination and energy of the Principal—been one of uninterrupted success. During the first session 61 students were enrolled, while at the termination of last winter session 194 were on the regular register. Owing to the large increase in the number of students, the accommodation afforded at Gayfield Square became insufficient, and the new buildings, furnished with every requisite for the work of a Veterinary College, were opened in October 1883. The results of the work of the past session were quite up to the average. At the January examination 25 students presented themselves, and 14 passed. In April, 74 were examined, and 49 passed. In July, 37 passed out of 49, making a total for the year of 100 passes out of 148 examinations. In the competition for the fifty prizes open to all the colleges in the kingdom, the New College had been very successful this time, carrying off the first and second prizes. Mr. C. Clarkson won the first of £50, and Mr. Hazleton the second of £30. At the termination of the last session the Principal of the Scotch Veterinary Schools determined to institute an important alteration in the arrangement of the time for attendance at college. Up to that time the year had been divided into two sessions—summer and winter—the summer session consisting of one term of eight weeks, and the winter session being divided into two terms of eleven weeks each. According to the new arrangement the winter session would commence on the first week of October instead of the last, and would continue without intermission (excepting the Christmas vacation) until about the second week in May, the summer session and April vacation then being abolished. It was further intended that there should only be two examinations in the year—one in January and the other in spring—instead of three as at present. This would be an advantage to the students, as it would enable them to devote nearly five months of each year to seeing practice. The new alterations would enable the work to be continued from the commencement of the session up to the time of the examinations. Other changes were contemplated, and would be discussed at the next meeting of Council. Two of them he hoped to see carried into effect without delay. The first was in connection with the arrangement of the subjects of the first and second examinations, and the second dealt with the order of the practical and oral portions of the final examinations. By the present arrangement about eight weeks more time was devoted to the study of



three comparatively unimportant subjects of the A examinations than was allowed for the preparation of the essentially important subjects for the B. It was not a good arrangement that students should be taught what drugs were used in the treatment of different diseases before they had an opportunity of learning anything about these diseases—even their names. The suggested alteration, if effected, would be a decided improvement. At the final examination, according to the present arrangement, the practical preceded the oral examination. The alteration suggested was that the oral should be held before the practical. If the student succeeded at the oral, but was rejected at the practical, he would not be required to present himself again, and it would be optional for him to study his practical subjects either at college or under the supervision of some suitable member of the profession. This alteration had been recommended for a long time, but it had always been met with great opposition. During the past few years the most horrible and detestable disease known as Rabies had been exciting the attention of scientists and the public in general in a most forcible and painful manner. Almost daily fresh cases were reported, and in some districts the frequency of its occurrence had given rise to feelings of the greatest alarm. This was not to be wondered at considering the agonizing and terribly fatal nature of the disease. It was more a matter of astonishment that the country, and more particularly the governing powers, should have allowed a preventable disease of such a nature to become general in the country for so many years without making any serious effort for effecting its extermination or prevention. What was required was the adoption and vigorous exercise of those thoroughgoing measures for stamping out the disease which had been so frequently recommended by the best authorities—measures which had been found to be of the greatest value when properly carried out. It being admitted that the disease was propagated by contagion only, it naturally followed that its extermination should be much more easily effected than in cases where disease was spread principally by infection. That suppressive measures could be carried out satisfactorily was proved by the experience of Berlin and Bavaria. Effective measures of extermination having been adopted and carried out, the result was that they were now practically free from rabies, only three deaths having occurred during the last seven years. He then related what the principal measures adopted were. According to the report of the House of Lords on Rabies, the adoption of preventive measures in Berlin had been most successful, and the disease had been completely stamped out, no case having been reported since 1883. In 1853 a severe outbreak occurred, and seventeen mad dogs were destroyed. In consequence of this the muzzling operations were put in force, and special provisions were employed to destroy all dogs found in the streets without muzzles, the owners of such dogs being liable to a fine of 30s., or even to imprisonment. In the Netherlands also suppressive measures had been carried out most successfully. The report on Rabies, already referred to, finished up with the following recommendations:—(1.) "That when Rabies is present the muzzle should be enforced. (2.) That the power of the police constable should be extended to authorise the slaughter of stray dogs. (3.) That the symptoms of Rabies should be endorsed on dog licenses. (4.) That local authorities should have power to order that dogs should wear badges which might identify their owners. (5.) That in populous places local authorities should place restrictions upon dogs generally, and especially deal stringently with dogs in their district. (6.) That in the event of its being conclusively proved that M. Pasteur's system provides a preventive remedy, facilities should be afforded for its application in England." These recommendations, he said, comprised nearly all the most valuable measures which had been suggested for the suppression of Rabies,

and if adopted and efficiently carried out would, in all probability, be attended by the rapid disappearance of the disease.

Mr. GREAVES, T.S., Manchester, in proposing a vote of thanks to Professor Lewis, expressed his agreement with his remarks regarding M. Pasteur's system. As a member of the Council of the Royal College of Veterinary Surgeons, he had pleasure in informing them that a letter from Principal Williams and the other principals of the Scottish Colleges had been before them on Monday, and had been fairly and fully considered. They had agreed to the request that there should be two examiners at each table, and that there should be only two examinations instead of three. They had not, however, been able to accede to the application for giving the oral examination precedence of the practical.

Principal WILLIAMS, in proposing a vote of thanks to Mr. Waddell for presiding, said he hoped the Council of the Royal College would yet see the utility of the proposal of the Scottish Colleges making the oral examination precede the practical. It was an essential reform, and he would fight hard for it. Referring to Pasteur's experiments, he said he was positive that in the end it would be found that in Pasteur's discovery we had one of the greatest blessings that had been conferred on mankind. They could not expect success in every case, but it lessened the mortality, and even when it failed in saving life it greatly mitigated the sufferings of the patient. Speaking of the spread of Pleuro-pneumonia, he said it would never be cured by legislation. In Scotland they knew as a fact that they could deal with Pleuro-pneumonia by inoculation. Their opponents might say there was more Pleuro-pneumonia in Scotland just now than elsewhere. That was true, but we would have had ten times more if there had not been inoculation. Had inoculation not been in force in Mid-Lothian the loss from the disease in the county would not have been merely £1,000, but £10,000.

The CHAIRMAN replied, and the proceedings were brought to a close.

#### MONTREAL VETERINARY COLLEGE.

THE opening lecture of the winter session of the Montreal Veterinary Medical College was delivered by Professor D. McEachran, F.R.C.V.S., in the lecture-room of the college, on October 4th, the subject being "Veterinary Science, and Diseases of Animals in Relation to the Public Health." The Dean of the Medical Faculty of McGill University, Dr. R. P. Howard, occupied the chair, and there was a large attendance.

Dr. McEACHRAN, in opening, expressed a hope that those who had attended previous sessions came back with renewed vigour and with a fuller conception of the necessity for an utility for their studies. To those who came up for the first time he would say, Do not be discouraged by the technicality of the elementary lectures, but adopt at the outset the motto, "Persevere and succeed." They were expected to devote their whole time and undivided attention to their work, and he was glad to say that as earnest workers and successful ones, too, the veterinary students ranked well with any students of the university. He urged them to be kind and fair in all their dealings with one another, and to be always respectful to their teachers, whether present or absent. He quoted from John Ruskin to show that their teachers knew best what they required to learn, and what they were capable of learning, and continued: "For your own encouragement I would merely say that such has been the progress of this profession, that a hundred years ago it was still a rude art, having scarcely more than emerged from the degradation which it was allowed to lapse into during the dark ages; to-day it ranks as one of the most important branches of medical science, having a scientific, as well as a commercial, importance secured to no other profession.



True it is that pecuniary emoluments and titled honours do not so often fall to our lot as in the sister profession, yet when I tell you that another of your fellow-students, Mr. Rowat, has been sent to practice and fill a Government position in the Sandwich Islands, with a guaranteed income of about 8,000 dols. a year, and several others are doing nearly as well, and that Her Majesty has been pleased to confer the honour of knighthood on the president elect of the Royal College of Veterinary Surgeons. Mr. H. L. Simpson, F.R.C.V.S., and the honour of C.B. on Principal Veterinary Surgeon George Fleming and Professor Brown, chief of the Veterinary Department of the Privy Council—and this is in a country which has so far allowed this profession to sink or swim without State aid—we have every reason to be proud of the position which we now occupy, and such distinctions should stimulate everyone of us to raise the stand of our education, and aim at being worthy members of a worthy profession. And never forget that a profession can never make a man, but a man can elevate or degrade a profession.” Proceeding to deal with the question of “Veterinary Sanitary Science,” Dr. McEachran said the importance of this subject was daily being more and more understood, and when people knew and realised the sad havoc constantly being caused in communities and families by diseases, dependent in many cases directly, and in others indirectly, on the communication of disease from animals to men, they would not rest satisfied till the present deplorable unsanitary condition of most of our towns and cities in this relation was remedied. As the compass of his address would not permit him to enter minutely into the details of investigations and experiments—these would be more fully gone into later—he must ask them to accept the statements about to be made as deductions from the scientific works of those whose special duties and opportunities have been confirmed and endorsed by the most eminent co-labourers. The diseases which we find most frequently communicated from animal to man, through an unsanitary condition, are, in the order of their importance, as follows:—1. Tuberculosis (Consumption); 2. Typhoid Fever, Scarlet Fever, Glanders, Entozoa, especially Tapeworm and Trichinæ, Parasitic Diseases, Ringworm, Itch, Septicæmia (Blood-poisoning), Variola and Vaccinia (Pox), Rabies or Hydrophobia. The communicability of Tuberculosis from animal to man has been proved beyond a doubt. How many a fond mother has fed her child on milk supplied by a tuberculous cow, resulting in the infant’s untimely death, and often being the origin of Tuberculosis in many a young man or woman. The insidiousness of this disease makes it difficult to arouse the people to its danger. The milk-supply is often tested by public analysts and police inspectors to prevent its adulteration by water, but no effort is made to prove the absence of diseased germs in the nutrient fluid which forms the chief diet of infants and invalids. He was aware that this disease was on the increase among cattle in Canada as elsewhere, and the importance of fathers and mothers making sure beyond doubt that the animals supplying milk for their dear little ones were free from all taint of it, could not be over-estimated. As a rule, milk-consumers, in the absence of scientific inspection, would act wisely in refusing to use milk from a cow with a cough particularly of a chronic character. Wherever the inspection of animals at the slaughtering places is not thoroughly carried out by competent persons, both in the living animal immediately before slaughtering, and the carcase and internal organs at the time of killing, a percentage of tuberculous cattle is to be met with which would arouse the most apathetic were it to be known.

*Typhoid Fever.*—Regarding Typhoid Fever, he said there was no room for doubt but that in many instances this disease was carried about by the milk-can, several outbreaks of Typhoid Fever in schools and hospitals having been traced to the farm or dairy, where the existence of a case of this disease

explained its extension to customers supplied by the dairyman. Hence it is necessary not only that the cattle supplying the milk be free from disease, but that there be no possibility of disease germs—Typhoid or Scarlet Fever particularly—having access to the milk, or milk-pans, or water with which it is diluted. This can only be done by inspection of the dairy and all its surroundings. Milk is the chief diet of the invalid, and specially of the Typhoid patient. Hence too much care cannot be exercised to guard against its absorptive powers. For this purpose, milk for the use of Typhoid patients should be bottled, kept close corked and at a low temperature, and not, as is too often done, obtained in quantity and kept in the sick room in an open jug or basin, constantly absorbing the germs of disease emanating from the patient, thus again to re-enter his system. He referred to the fact that, while Typhoid is known to prevail where imperfect drainage exists, and sewer gases are usually considered to be the cause of it, strange to say the disease prevails where most attention has been paid to sanitary matters, and proceeded to consider the prevalent belief that gas escaping from stables and from animals' excreta were injurious. The excreta of animals which live on purely vegetable diet, or even decayed vegetable matters, did not support those forms of animal life usually forming bacteria or micro-organisms usually found in most diseases. It was from decayed animal substances and the excreta of animals or persons fed on animal food that we find the most danger. On the other hand, many instances of restored health can be found from the almost constant companionship with horses and cattle in the stable and out of it. He alluded to the pestilential odours which were often caused through domestic pets, and which, on many occasions, when disease resulted, caused a cry of bad drains to be raised. Those pests, the rats, which he described as an indirect precursor of disease, often made direct communication with the drains, and caused air or sewer passages by which an entire house was enveloped in an atmosphere of sewer-gas, which seemed to come and go with changes of wind and weather. Besides this, there were the emanations from the excreta and decomposing carcasses. Typhoid Fever prevails always after a dry season, especially when it is followed by a sudden and copious rainfall, because insufficient water is not pressed into the drains to carry off the solid or semi-solid mass which accumulates in them. With the flushing of the rain, the sewer-gas, charged with diseased germs, rushed through the open drains and rat-holes into our houses, the heated condition of the air in which induces this gas-current with which we are all familiar when we pull the plug out of a fixed wash-basin, somewhat modified and purified by the water in the trap, and better still when a defective point of leak in the soil-pipe allows it to escape free in an apartment.

How is this to be prevented? The proprietor of the house should remove all lead and earthenware soil pipes from within the houses, use only solid and large iron pipes, see that the pipe runs either into a chimney which is in use, or else several feet above the roof. He should see to it that all the joints are gas-tight, and all connection provided with the best kind of traps. Abolish the wash-basin from the bedrooms, bathrooms, closets; and wash-basins should have no direct communication with the sleeping or living room, and should have direct light and ventilation, not borrowed, as is too often the case. To prevent accumulations, the drains should be flushed by a full stream of water being run through them for several hours at least twice a week. Better by far increase the water-rate by a trifle per annum than allow the present unsanitary condition of our fair city to continue. Householders should be compelled to turn on their taps and let them run for, say, three hours simultaneously at least twice a week, or else the highest hydrants should be opened by the Corporation men. In addition to this, provision should be made for the special flooding of main tunnels, especially Craig-street. And



here a very simple plan, at comparatively little cost, is within our reach. Discussing this subject recently with a well-known contractor—Mr. L. J. Mallette, of Ottawa and St. Ann's—he suggested the tapping of the Lachine Canal above Cantin's shipyard, and every Sunday at least turning on a full current to wash out the tunnel and remove the sedimentary filth which here must be great. This suggestion is worthy the consideration of the Board of Health as a cheap and effective means of improving the sanitary condition of a very large and populous portion of the city.

*Scarlet Fever.*—This disease is also carried about by the milk-can, and has been traced in many instances to milk supplied by dairymen in whose families the disease existed. Hence the importance of care being taken that milk supplied by public dairies be not exposed to Scarlatina infection. Recent investigations go to prove that disease, similar in all respects to Scarlatina of the human subject, is met with in dairy cows, and of such importance has the subject been considered that the Veterinary Department of the Privy Council in England have been asked to investigate and report. This subject has frequently been urged by both the medical and veterinary professions in this country for years, yet, strange to say, not even the sad and awful experiences of the Small-pox plague, which cost us thousands of our population and millions of lost and diverted trade, has awakened the populace to the outrageous—nay, criminal—neglect of our Corporation in making provision for the prevention of these deadly but preventable diseases by a proper system of expert inspection and operative enactments, which will give power for carrying out wise and effective sanitary measures, of which inspection of dairies is not the least. Dr. McEachran also alluded to many other diseases which were capable of communication to man, such as Glanders in horses, Entozoa in beef and pork, especially Tape-worms, Septicæmia, or Blood-poisoning, and Rabies or Hydrophobia. In reference to the latter, he said considerable interest had been attached to Rabies, or Hydrophobia of late years through its prevalence in Europe, and the success which has attended the scientific experiments with cultivated virus conducted by the great bacteriologist, Pasteur. He quoted from the report of the committee of the English Local Government Board to show that the inoculations practised by Pasteur on persons bitten by rabid animals had prevented the occurrence of Hydrophobia in a large proportion of those who, if they had not been so inoculated, would have died of that disease, and that the value of his discovery was considered very great indeed.

The CHAIRMAN, at the conclusion of Dr. McEachran's lecture, referred to the gratifying fact that the veterinary and medical professions were working hand in hand, and endorsed all the doctor had said with reference to the communicability of certain diseases from animal to man.

## Obituary.

The death is announced of Mr. Joseph Leather, M.R.C.V.S., in his sixty-seventh year, the melancholy event taking place at his residence, Melrose House, Springfield, Everton, near Liverpool, on September 28th. Mr. Leather, who graduated in 1862, was much esteemed by a large circle of friends, and was one of a family which included at one time several members of the profession.

The following deaths are also reported:—John Arnold, M.R.C.V.S., Thrapstone, Northampton, who graduated in 1846; Richard Hudson, M.R.C.V.S., Retford, Notts, a graduate of 1872; and Francis Thomas, M.R.C.V.S., Earl Shifnal, Salop, who graduated in 1870.

**Notes and News.**

**A WARNING TO VETERINARY SURGEONS.**—Joseph McCauley, a veterinary surgeon, Carlisle, who only graduated this year, was charged at Haltwhistle Police Court, on Sept. 29th, with aiding and abetting George Tweddle, Wydon Eals, Haltwhistle, to unlawfully remove twenty-three heifers from Carlisle into the county of Northumberland, on Sept. 19th, by issuing a license, not being a duly appointed inspector authorised to sign and issue such licences. Mr. S. Sanderson, Clerk of the Peace for Northumberland, prosecuted, and Mr. T. Johnson, solicitor, Carlisle, defended.—Mr. Sanderson stated that Mr. McCauley had been in the habit of signing certificates for the removal of cattle from Carlisle into Northumberland, although not an appointed inspector, and he had twice called Mr. McCauley's attention to the fact, but his letters were disregarded, and Mr. McCauley continued to sign the certificates. No one had to sign these licences unless they were properly appointed, which Mr. McCauley was not, consequently he had no right to do so.—George Tweddle gave evidence to the effect that on September 19th Mr. McCauley signed the document, and witness paid him 5s.—For the defence, Mr. Johnson stated that what Mr. McCauley had done was not unlawful. He merely signed the certificate, but did not remove the cattle. He (Mr. Johnson) contended that it was merely an indiscretion on the part of his client.—The Bench inflicted a fine of £10 and costs. Other two cases against Mr. McCauley were withdrawn.

**GRAND VETERINARY COUNCIL OF FRANCE.**—The association of French Veterinary Surgeons designated by this title, which has just met at Bordeaux, expressed an opinion that the inspection of meat ought to be very much more real than it has been. A vote was also unanimously passed expressing the view of the association that veterinarians ought to be admitted as members of the National and Departmental Sanitary Councils. A vote passed last year at the meeting held at Lille, to the effect that one of the diplomas of Bachelor of Letters or Bachelor of Sciences ought to be compulsory for veterinary students, was confirmed.

**MEAT INSPECTION IN BERLIN.**—At the Berlin meat examination station during the month of August there were examined 7,945 calves, 11,788 sheep, 7,216 pigs, and 8,265 quarters of beef. Of these were condemned 17 pigs (including one from trichinæ, 8 from measles, and 4 from tuberculosis); also 3 calves and 9 sheep; 24 of the beef quarters, 8 of which were affected with tuberculosis, and 8 from jaundice; 62 lungs and livers were also condemned.

**THE ALFORT VETERINARY SCHOOL.**—Some marked changes have taken place in the staff of this celebrated school. The director, M. Goubaux, has retired after forty-six years' zealous service, latterly as Professor of Sanitary Police and Jurisprudence. The French Government, to mark its sense of the able manner in which he has discharged his duties for this very long period, have accorded him the distinction of Honorary Director. He is succeeded in the important office by M. Nocard, Professor of Surgical Pathology and Clinic, who, although young, has won golden opinions for his scientific knowledge and work, no less than for his administrative tact. He passes over Professors Jolin and Trasbot, who are much senior to him as members of the teaching staff. M. Saunier, Professor of Physics and Chemistry, also retires, after a service of thirty-two years.

**RABIES IN DEER.**—A year ago the deer in Richmond Park, near London, were seen to be suffering from some strange disorder. Several of them died; but it was not until January, 1887, that the disease was proved to be Rabies. Since then the keepers have been doing their best to stamp out the infection, but with little success. For a while there are no fresh cases; then several



animals are found to be infected at the same time, and have to be destroyed. At least 150 fallow-deer have already been killed, though the red deer seem so far to have escaped the contagion. When the disease was pronounced to be Rabies, the keepers were somewhat incredulous; but to any one well acquainted with the symptoms the condition of the poor animals which were netted and brought for inspection could not be matter for doubt. Even when the fact was proved by experiment, it was difficult to understand how the infection was communicated. Deer, it was said, do not bite when fighting, but use their horns. It was observed, however, that the rabid deer did bite others, inflicting very severe wounds; for though the stag has only a pad of bone in the upper jaw, the lower is armed with from four to eight very sharp incisors. They are also fond of licking each other, and it was found that the saliva of an infected deer was fatal to a dog: a healthy doe after being bitten by it also died rabid. It was hoped that the further spread might be checked by isolating the animals infected: a plan which was rendered less difficult than might be supposed by a habit which the deer have, after the breeding-season, of dividing into separate herds into which intruders are not admitted. As the disease was apparently confined to a single herd, it seemed probable that by separating this from the others the disease might be kept within bounds. On the north side of the park near the head keeper's lodge is an old enclosure, which was enlarged, and the herd were then decoyed into it by food placed inside. This was not difficult, as during the winter months the deer are always fed with hay, maize, and swede turnips, and the heavy snow made them tamer than usual. The ground was well suited for keeping them in health, as it is on a hill, with a good supply of water, and dotted with large trees and patches of bracken for shelter. In July about thirty stags and fifty hinds were left in the enclosure; the stags keeping in a separate herd and lying quiet, as their horns were in the velvet, when they are very tender. But, though apparently healthy, several stags had been shot the day before my visit, and had no doubt left the seeds of further mischief behind them. Since then nearly all those first confined have been destroyed, and now another herd is enclosed as suspect. But this is not the whole extent of the mischief. Isolated cases have appeared in the park; and if these increase it will be difficult to know what further precautions can be taken, for the season is at hand when the old herds are broken up and the stags join the hinds for some time. Though so many have been lost there are still more than 1,200 deer left in the park, both red and fallow, and few parks contain a larger stock in proportion to their size. It was once supposed that the two species could not be kept together, and in some places, as at Grimsthorpe and Badminton, they are still separated. But at Richmond they live together peacefully enough, and I have seen the red and fallow stags feeding in the same herd. The fallow are true woodland deer, and their colour exactly matches that of the dead bracken; the red deer prefer the more open ground. At present, though the stags have not joined the hinds, many have left the company of their own sex and are lying quietly by themselves in the fern. In July the fawns are born, when the bracken is highest and the mothers can best conceal them. The fawns of the red deer are spotted like the fallow. Though the red deer of Richmond do not reach the great size of those in Windsor Forest, many of them are above the average of those in a Scotch forest.

**RABIES.**—At a recent meeting of the Royal Society, Mr. Victor Horsley communicated a paper by Mr. G. F. Dowdeswell, M.A., on Rabies, of which the following is an extract:—In this investigation conducted in the laboratory of the Brown Institution, commenced early in 1885, during the outbreak of Rabies in London, the first experiments, made by subcutaneous inoculations with the saliva of rabid street-dogs, all failed to produce infection. Subse-

quently, adopting the methods described by M. Pasteur, Mr. Dowdeswell found.—1, That the virus of Rabies and Hydrophobia resides in the cerebro-spinal substance, and in the peripheral nerves, and is not confined to the salivary glands, as hitherto supposed. 2. That by inoculation of this substance upon the brain of another animal by trephining, infection follows much more quickly and certainly than by subcutaneous inoculation. 3. That Rabies, however produced, in both dogs and rabbits, is essentially a paralytic affection, the same disease in both animals, and that there is no constant distinction between the so-termed “dumb” and “furious” Rabies. 4. That the initial virulence of street Rabies is usually increased, and becomes remarkably constant, by passing through a series of rabbits. 5. That the activity of the virus is shown by the duration of the incubation period, to which it is inversely proportionate. 6. That the tissues of an infected animal do not themselves become infective till towards the end of the incubation period. 7. That of a large number of drugs that were tried, both germicides and those acting specifically upon the cerebro-spinal system, none materially modify the action of the virus in the rabbit. 8. That by a series of subcutaneous inoculations with virus treated by the methods of M. Pasteur, immunity, even against subsequent infection, cannot be conferred upon the rabbit; and that the extreme and unexpected constitutional refractoriness of the dog to infection with Rabies by any method of inoculation—as the author found it in the limited number of experiments he had been able to perform with this animal—renders it extremely difficult to determine the effect of such remedial or prophylactic measures in it; and that it is by the statistics of the treatment alone that their effect with man can be decided; but that, judging from the results of the experiments of others, the principle of the method as affirmed by M. Pasteur appears to be established, though unquestionably the “rapid” or “intensive” treatment, as Mr. Dowdeswell had found, is liable to produce infection.

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## Correspondence.

### EQUINE SYPHILIS.

DEAR SIR,—On page 161 of the current number of the VETERINARY JOURNAL, I note, with interest, an editorial concerning the outbreak of “*Maladie du Coût*” in Illinois.

The centre of the infected area is about twenty miles distant from me, and is in a portion of the territory over which my practice extends, and in my capacity as Assistant State Veterinarian, it has fallen to my lot to be the first to report the matter. I have conducted almost all the investigations alone, and have just made a general report upon the malady, its extent, etc., to the State Board of Live Stock Commissioners of Illinois.

The reported nine stallions kept in Bloomington under treatment were really only one-third that number, the error having been due to careless reporters; and the animals were in my charge.

Being situated, as I am, in one of the most important draught-horse breeding centres in the United States, and this malady breaking out in my immediate neighbourhood, as well as my official connection with the outbreak, leads me to take a deep interest in the disease, and gives me a strong desire to learn all I can concerning it.

I have learned much from your very excellent article upon the disease in your *Veterinary Sanitary Science and Police*, but you refer in your editorial to interesting publications by the Austro-Hungarian Government of a more recent date.

Would you be so kind as to inform me where and how I can obtain these



publications? If they can be had in England, and you will kindly hand this letter to a bookseller who will send them to me with charges, I will at once remit; or if you can without trouble forward this letter or my address to parties on the Continent who can furnish me with them as above, I shall feel myself under great obligations to you.

My report just completed will, I presume, be published, and if you desire I shall gladly forward you a copy of the same, or will furnish you any facts in my power regarding this outbreak which you may desire.

Trusting you will kindly pardon my intrusion (as I know of no other means of obtaining the desired publications).

W. L. WILLIAMS, V.S.

Bloomington, Illinois, U.S.A.

*September 14th.*

[The work we alluded to is by Dr. Ludwig v. Thanhoffer, Professor in the Budapest (Hungary) Veterinary School, and was published in that city in 1882. The title is "Über Zuchtlähme; Nach Einigen Pathologisch-Histologischen Untersuchungen." The treatise has some excellent plates. The publishers of the VETERINARY JOURNAL will be requested to procure and forward it to our correspondent. We shall be very pleased to receive a copy of our correspondent's report.]

SIR,—Under the heading of "Equine Syphilis in the United States of America," in September's issue of your Journal, it was stated that the above-mentioned disease was known "to the Arabs as El Dourine." Believing that the term "Dourine" and "Maladie du Coït" are used synonymously by writers on "Syphilis of the Horse" in French works of veterinary medicine, I asked a Frenchman the English for the disease called in France "Dourine," and he immediately stated it to be "Syphilis of the Horse."

I further ventured to inquire of the native medical authorities as to the disease known amongst "the Arabs" as El Dourine, but was informed that such a malady in the Arabic was not known, and further, Dr. Rijky Bey undertook to search for the word in medical and other dictionaries, but could not find such a word as "El Dourine" in the language. Sub.-Vet. Insp. M. Saifout, who has studied and taken his diploma from the Veterinary School at Alfort, informs me that the Arabic term for the disease known in France as "Maladie du Coït" is "Morade el Guimah."

Syphilis of man is known by the Arabs as "Jan bil Franki," that is to say, the "European disease."

WILLIAM LITTLEWOOD, M.R.C.V.S.

Board of Health, Cairo, *Sept. 13th.*

#### VETERINARY EDUCATION.

SIR,—It comes without the saying that all of us are interested in professional progress; to be otherwise would be traitorous to our best interests. That we do not all think alike or pursue the same track is perfectly natural, and yet those most opposite may be equally sincere. As far as I can gather the sense of Mr. Harvey's letter, it is that graduates that have had no previous professional training are equally fitted to practice with those that have. On this point I am at direct issue with him. It is no question of those who work or those who are lazy; it is a question of opportunity, and I maintain that the facility for practical attainments is at schools restricted, if not in numbers, in range. If a youth enters a pupilage, and becomes a worker and a student, we may infer that the further he advances the keener his quest, and it is these that become the ornaments of the profession. Surely Mr. Harvey does not mean that the curriculum is sufficient to enable a student to thoroughly fit himself for practice. This is contradicted by the numerous advertisements in your pre-pages of recent graduates who willingly go for a small salary, some for

none, *but who must see practice*. Something more is necessary for our clients, at all events, than gentlemanly address, good style in turn out and costume, and the ability to *explain* disease. By the last I mean empirically or by rule of thumb; *they* require the knowledge to distinguish, and also skill to treat it, both in its simple types and in its complications. These are not learnt at college, and if they have to be obtained *after* a man has commenced practice, it is at the expense of his clients' pockets and of his own reputation. Such a course is a sham and an imposition, and, candidly speaking, is within touch of the "Statute of Fraud." I was a pupil for some years before entering college; a student there, and am still one, and withal I find much to learn, but I do not profess to be a "heaven-born genius," or to have found "the royal road." The *faux pas* made by untrained graduates can be proved by many of us, and they are neither singular nor exceptional, or amongst the lazy or stupid ones, but amongst the more distinguished, that is, if honours count. The inuendo anent the "stable" is not in the best possible taste when we consider that to be a thorough practitioner a man must be well acquainted with every detail connected with it, and not in a kid glove manner either. More, it is affectation to despise what is a source of knowledge and also of profit, especially when there is nothing derogatory or degrading about it.

Your leading article of this month deals with the question in a very earnest and able manner, and I would recommend its perusal to Mr. Harvey and to all who value the honour of our profession.

W. Cox, M.R.C.V.S.

October 10th.

We are requested to state that the next meeting of the Royal Counties Veterinary Medical Association will take place at the First Avenue Hotel, High Holborn, London, on November 26th, when the discussion on Professor Robertson's paper—Inoculation as a Preventive of Pleuro-pneumonia—will be resumed.

We will thank our correspondents, when they send newspapers, to mark the passages they wish us to notice.

### Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from W. L. Williams, Bloomington, Illinois; J. A. Nunn, A.V.D., Maritzburg, South Africa; W. Littlewood, Cairo; Messrs. Arnold, London; H. C. Wilkie, Wolverhampton; F. Raymond, A.V.D., Woolwich; S. Wiltshire, Pietermaritzburg, South Africa; H. Kidd, Hungerford; J. Lambert, A.V.D., London; C. Cunningham, Slateford; S. Wilson, A.V.D., Aldershot; F. C. Mahon, Southsea; A. Leather, Liverpool; W. Penhale, Barnstaple; J. R. Green, Alfreton; W. Cox, Newcastle-on-Tyne.

BOOKS AND PAMPHLETS: *H. T. Lilley*, Bench Book for Test Tube Work in Chemistry; Report of the Minister of Agriculture for the Dominion of Canada; *R. W. Burke*, The Equine Diseases of India; *M. Laulaine*, Programme de Cours de Physiologie professé à l'Ecole de Toulouse; *M. Reuter*, Die Schweineseuche und deren Wirksame Bekämpfung; *J. Law*, The Farmer's Veterinary Adviser; *J. B. Buist*, Vaccinia and Variola; *G. A. Banham*, Tables of Veterinary Posology and Therapeutics; *H. W. and G. Gresswell*, How to play the Fiddle; Veterinary Reports on some Diseases of Stock found in Victoria; *A. L. Buonsanti*, L'Indirizzo e il Metodo nell' Insegnamento della Anatomia Veterinaria.

JOURNALS, ETC.: *Nebraska Farmer*; *Time*; *Journal of National Agricultural Society of Victoria*; *Echo Vétérinaire*; *American Live Stock Journal*; *Annales de Méd. Vétérinaire*; *Hufschmied*; *Recueil de Méd. Vétérinaire*; *Live Stock Journal*; *Thierarzt*; *Wochenschrift f. Thiermedizin und Thierheilkunde*; *Lancet*; *Journal de Méd. Vétérinaire*; *Edinburgh Medical Journal*; *Clinica Veterinaria*; *Mark Lane Express*; *London Medical Record*; *Annales de Méd. Vétérinaire*; *British Medical Journal*.

NEWSPAPERS: *Essex Newsman*; *Carlisle Journal*; *Scottish Leader*; *Daily Nebraska State Journal*; *Times of Natal*; *Montreal Gazette*.



# THE VETERINARY JOURNAL

AND

## Annals of Comparative Pathology.

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DECEMBER, 1887.

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### A NEW OPERATION FOR THE CURE OF LAMENESS ARISING FROM SIDE-BONES.

BY FRED SMITH, PROFESSOR, ARMY VETERINARY SCHOOL,  
ALDERSHOT.

IN a lecture I recently delivered before the Southern Counties Veterinary Association on the "Rational Treatment of some Diseases of the Limbs," I was tempted to give publicity to an operation I first performed four years ago for the cure of lameness resulting from Side-bones. It was not originally my intention of making the operation public until I had tried it in every way and thoroughly tested its value; but after the long period of four years, during two of which I have been relieved from active professional practice, I felt that delay was unwise, as I had already collected sufficient material to strengthen my hands, and to justify me in advising the operation.

I take it that the lameness in Side-bones is due to the pressure exerted on the sensitive laminæ by the enlarged and rigid cartilage on the one hand, and the unyielding wall on the other.\* It occurred to me that if this was the case, the lameness could be removed if I relieved the laminæ from pressure, and the foot from tension, by making such incisions into the horny wall of the foot as would permit it to bulge, or, at any rate, would permit the enlarging cartilage to be accommodated without pressure on the delicate and sensitive parts covering it. This is the *rationale* of the operation which I first performed on horse E 30, 12th Royal Lancers, on 4th October, 1883.

There is an old and very true saying that "there is nothing new under the sun"; such appears to be the case in the present instance,

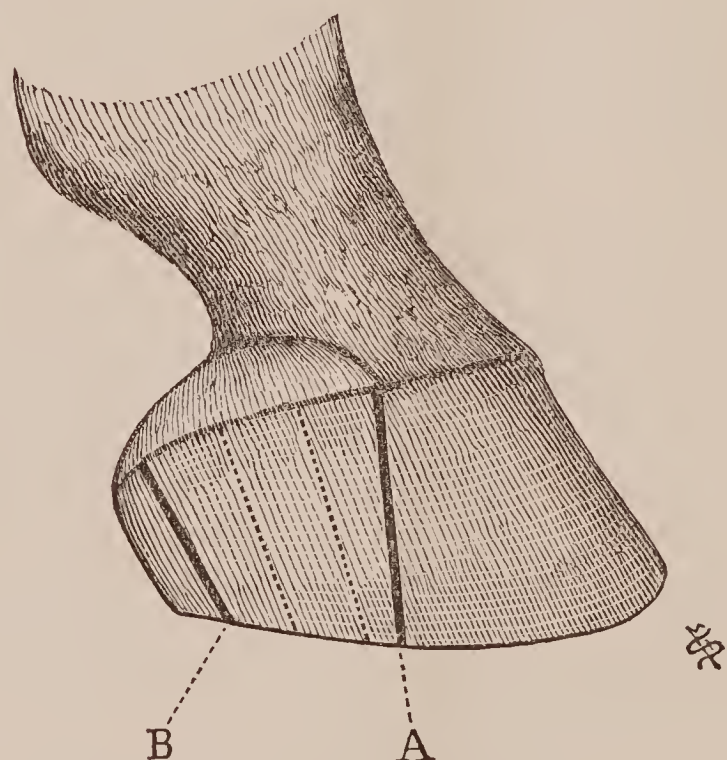
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\* I have heard lately that it has been stated that the sensitive laminæ *do not* cover the lateral cartilages of the foot. I can only refer those who doubt the truth of the statement to a dissection of the foot.

for Mr. Duck and I saw the other day at Alfort, a horse's foot cut with a drawing-knife in much the same way as I advocate being done with a saw; being performed over the seat of Side-bones, we inferred it was done for the relief of this disease.

I may now go a step further, and will say that an operation based on the same principles as the above is clearly indicated in certain cases of Laminitis to prevent "dropping of the pedal bone."

I believe that there is a great future in store for mechanical treatment of certain diseases of the feet, and I have elsewhere strongly expressed myself that the specimens of mutilated feet, the result of acute Laminitis, which adorn the shelves of our museums,



will, in a future generation of practitioners, be regarded as a silent testimony of our ignorance, for I am convinced that such cases are *preventible* by early operation.

To return, however, to the subject of Side-bones. As soon as I am satisfied that I have a case of lameness due to ossification or partial ossification of the lateral cartilage, I prepare to relieve the sensitive laminæ from pressure, *and to increase the size of the foot* for the accommodation of the gradually enlarging cartilage. This is accomplished by sawing through the wall of the foot in two or more places, until I have passed through its entire thickness, from the coronary band to the ground surface, taking care that I go no deeper than the outside of the horny laminæ.

For Side-bones, the part of the wall operated upon is, of course, the quarters and heels. I note how far forward the cartilage can



be felt, and I mark the wall at this spot with a piece of chalk ; the same is done in a backward direction towards the heels ; from my anterior chalk mark, I draw a nearly vertical line from the coronet to the ground ; from my posterior mark I draw a line obliquely downwards and forwards, so as to strike the ground surface of the foot just before where the wall is inflected to form the bars. (See Fig.) It is obvious that if I now cut with a saw through the marks drawn until I get through the whole thickness of the wall, that I shall have isolated the greater part of the quarters and heels of the foot ; but the isolation would not be complete, for I still have the wall attached to the sole ; this union is severed by means of the drawing-knife, a fine searcher being used and the wall completely isolated from the sole (between the anterior and posterior incisions), until specks of blood commence to appear. If both sides of the foot require operating on, the same directions apply.

The next thing to do is to place on a bar shoe with no bearing on the operated quarters and heels, the shoe resting upon the frog and anterior portion of the foot ; the fine cuts made in the wall are filled in with a little wax or hard soap to keep out the dirt, and with the same object a little tar and tow is placed in the groove between the wall and sole, and kept in its place by the shoe. The horse may be rested for a day or two and then sent to exercise, which latter is an essential part of the treatment ; this exercise to commence with should be walking, and if a saddle-horse, trotting may be permitted the second or third week ; if a horse used for slow draught purposes, he may be sent to work almost at once.

In favourable cases soundness is restored in a few weeks—usually, so far as I can see, in about three or four, though some cases are of course longer than this. It will now be observed that the new wall growing down bulges at the coronet ; it is larger than the old wall ; in other words, the operation has relieved the cartilage from pressure, allowed it to enlarge, and caused the wall to accommodate itself to the increased size obtained. This bulging of the coronet is most marked, and is a very striking feature. It tells its own tale in a silent but practical manner.

As the result of a certain amount of experience in the operation, I would lay down the following as a guide to its performance.

Mark on the wall of the foot (while the latter is on the ground) the distance forward that the enlarged cartilage can be felt, and from this point draw a vertical line to the ground so as to cut the fibres, not in the direction of their length, but crosswise ; the object of this is to secure as much foot as possible to nail to ; next mark the posterior extremity of the cartilage, and this time draw a line in the direction of the fibres, to terminate on the wall just in

front of the inflection of the heel; between the anterior and posterior incisions other sections may be made, if considered necessary, so as to further release the wall. This was suggested to me by Mr. Poyser, A.V.D., and I have tried it in two cases; it is yet too early to pass an opinion as to whether these secondary incisions are advantageous. The foot is now ready for operation, the shoe being removed, and no means of restraint employed, as the procedure is quite painless: with a short sharp saw, kept well oiled, the wall is cut through; the most difficult part to manage is the upper portion, near the coronet, as the latter is liable to be touched by the teeth of the saw. Try and saw perfectly level, so as to cut the wall the same depth throughout; as we get deeper the instrument must be worked with a lighter hand, and at the *first sign of flinching*, withdraw it at once; proceed, then, with the next incision in exactly the same way. The foot all this time is held up by an assistant close to the elbow in order to steady it; it is now placed between the knees, and, with a fine searcher, the wall is gradually separated from the sole by a narrow groove between the anterior and posterior incisions, until specks of blood appear, or the animal commences to flinch, when the operation is completed so far as that half of the foot is concerned. A bar shoe is now applied and the bearing taken off the loosened wall, which by this time should easily spring under the pressure of the thumb; if it does not so spring, the incisions are either not deep enough or long enough, and the operation will surely fail. To prevent dirt getting into the incisions, fill them in with hard soap; and now a peculiar fact will be seen: suppose that all the incisions are carefully filled in flush with the wall, and the horse is then made to trot, it will be found on again looking at the foot, that the soap from most of the incisions, particularly the rear ones, *has been squeezed out*, or partly so, caused, I take it, by the expansion of the foot bringing the sides of the incisions together. Another demonstration of the expansion of the foot is afforded by the fact that an incision made in the wall when the foot is off the ground, which will admit of the saw working freely, will, when the weight is on the limb, "grip" the saw, and it cannot be worked. I am perfectly aware that my deductions will not be accepted by many, but the experimental facts still remain.

About a fortnight or three weeks after the operation, it may be necessary to deepen the incisions, as they soon come together, especially towards the inferior part of the wall, and, moreover, they appear to fill up from below and become shallower.

One of the principal parts of the treatment is to keep the patient either at work or exercise.

For a day or two after the operation the lameness may appear



more marked, but this is only to be expected; it will soon pass off. Later it may be observed that the coronet is gradually bulging over the Side-bone, and the wall will grow down with this bulge, which may be accepted as a most satisfactory result. The extent of the bulging may be known by measurement, both before and a week or two after the operation. I have lately heard of a case where the coronet enlarged no less than 2 inches four weeks after the operation, and the horse went sound.

There is no drug, operation, or line of treatment I know of which is infallible. The operation described must not be expected to succeed in every case, for we know that many forms of this lameness are complicated by other changes occurring in the foot; deposits on the plantar surface of the pedal bone, mechanical interference with the structures in the centre of the foot, etc., are unrelieved by external operation, and, in fact, are only alleviated by the entire deprivation of sensation by the operation of neurectomy. I know full well that this side-bone operation will be condemned by many practitioners who have never tried it, and by others who have tried it *once* and failed to obtain benefit. I can only say to the latter, try it again and again, until either satisfactory or unsatisfactory results are obtained, before passing an opinion.

In the early part of this communication I referred to the treatment of acute Laminitis by the operation of incising the wall of the foot, to prevent the descent of the pedal bone. The part operated upon should be that portion of the wall situated between the quarters of the foot. The depth of the incisions should be down to the horny laminæ, the length of them from the coronet to the ground surface, and, lastly, the wall to be separated from the sole between the incisions. By this operation tension is removed, the pressure on the pedal bone (arising from the throwing out of serum and the swelling of the sensitive laminæ) is entirely prevented, and the *wall* of the foot bulges instead of the *sole*.

At what period of the disease is this operation indicated?

My answer is, between the third and fifth days of the attack, when we find the disease is not yielding to treatment, and when we know that the separation of the horny from the sensitive laminæ is occurring, a condition which will ultimately end in disorganization of the foot; I would advise operation even earlier than the period named, if we find that blood or serum is oozing from the coronet.

I am arranging an instrument to facilitate sawing through the wall.

In concluding this notice I append the opinion of two veterinary surgeons who have lately tried the side-bone operation.

Mr. Savage, V.S., A.V.D., 5th Lancers, writes to me as follows :  
“I performed your operation for Side-bones, affecting both fore feet, on troop horse H 21. Previous to the operation she had been lame on and off for months, latterly intolerably so ; the usual treatment was adopted, but without success.

“On the 9th August both fore feet inside and out were operated upon ; the mare went to her duty sound on the 8th September, the feet having enlarged considerably at the coronet—as much as two inches. I have unfortunately lost sight of the case, as she was cast for roaring. I am most favourably impressed with the value of the operation, and shall practise it in the future.”

Assistant Professor Rutherford, Army Veterinary School, affords me the following observations respecting his experience of the operation. Captain G——’s bay cob gelding, seven years old, was operated on for Side-bones, both fore, inside and out, on the 12th August. At the time of operation the circumference of the upper part of the hoof was  $11\frac{1}{2}$  inches near fore, and  $11\frac{1}{4}$  inches off fore. On the 24th October the cob was discharged cured. The hoofs now measured—near fore  $13\frac{1}{4}$  inches, off fore  $13\frac{1}{4}$  inches.

Troop horse C 6, nine years old, operated on for Side-bones, both fore. The circumference of the upper part of both feet was  $12\frac{1}{4}$  inches. The operation was performed on the 26th August, and on 5th September the case was discharged cured. The feet now measured  $13\frac{1}{2}$  inches in circumference. “C 6 especially pleased me ; he had not been going sound for two years.”

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## TRAUMATIC PERICARDITIS.

BY HAROLD LEENEY, M.R.C.V.S., EAST GRINSTEAD.

THE case of “Traumatic Pericarditis,” communicated by Mr. J. R. Green, is interesting, if only from the able manner in which he records it. But I venture to think such cases are by no means rare, as three very similar ones have occurred in my practice in about two years.

The first was a steer, the property of Lord Dunsany. It refused food, and kept standing for a week ; no cough, no hurried respiration, and, in fact, a total absence of all symptoms beyond the failure of appetite and rumination. Percussion on the left side indicated a large dull area, which I diagnosed as an abscess. Gave a cordial dose or two, and was sent for after dark to make a *post-mortem* examination, as the bullock was found dead, resting on his sternum in a most comfortable-looking attitude. I had previously marked out the affected area, and at



night, with only a candle, satisfied myself by cutting out two ribs, and coming down on an abscess containing more than a gallon of fluid. The next day the cowman brought me a piece of fencing-wire, about five inches long and much blackened; he had found it imbedded in "the bottom of the bag"—the cyst which I had examined. Wire-fencing had been recently put up, and the other cut ends of it were still to be found.

The next case was at Imberhorne Manor (E. Blount, Esq., C.B.), and occurred not long after the other. I was bold enough to give an opinion that a piece of wire or nail was the cause. This animal (a cow) stood for ten days without any special symptoms, except that auscultation failed to detect any heart-sounds at all. At times I imagined a sound like a muffled drum, but could make nothing definite of it. I have noticed the same kind of thing in Splenic Fever. I can only describe it as a muddled sound—no "lub" "dub," but a sort of fluttering impulse. This cow dropped dead without any warning, and on *post-mortem* examination, the pericardium was found distended to the size of a stable bucket, and the heart was imbedded in it, with just that same appearance of "petrified sponge" to which Mr. Green so admirably compares it. On examination of the wire, it proved to have belonged to a publican's beer-can, and had a little piece of tin adhering to it. This could easily be accounted for, as large quantities of London dung had been brought by train and spread upon the land.

The third case (also a cow) had been suffering from Parturient Apoplexy, and made a rapid recovery, when, a week after, violent palpitation of the heart ensued, which was not allayed by large doses of Digitalis. She dropped dead, like the others. *Post-mortem* examination revealed a nail (one of those commonly called "French nails"), lodged in the pericardium; but the rumen and the liver, as well as diaphragm, were literally riddled with the number of passages this body had evidently made; and yet the cow had never been observed to suffer in any way.

## PARALYSIS OF TAIL AND RECTUM FROM FRACTURE OF SACRUM AND COCCYX.

BY S. M. WILSON, FIRST CLASS VETERINARY SURGEON, A.V.D.,  
ALDERSHOT.

BAY gelding, troop horse of H Battery, 2nd Brigade Royal Artillery, stationed at Sheffield. March 1st, 1887, was admitted for contusion. The injury was just above the root of the tail. Cause unknown, supposed to have slipped up in the stable. The

horse was quite unable to raise his tail. If the tail was raised great pain was evinced. No swelling, but great pain on pressure over the spine, about two inches above the root of the tail, and the horse seemed very much afraid when approached. It is, of course, possible the injury may have been the result of a blow. The horse had great difficulty in urinating, and assistance was required in voiding fæces. Applied blister (℞. Hyd. Biniod. Rub. ʒj, Cantharides pulv. ʒj, adeps ʒij) from root of tail, forwards about twelve inches, and about the same width. Gave occasional enemas. Mash diet; nitrate of potass occasionally in the water. During the month of March I became convinced there was a fracture, and I thought it was most probably the first coccygeal vertebra.

My next entry was March 29th. No power whatever to raise the tail or void fæces; still great pain and difficulty in urinating. Paralysis of sphincter ani. Feeds well. Mr. Cartledge, F.R.C.V.S., Sheffield, very kindly looked at the case with me, and concurred in my opinion that there was a fracture.

April 11th. Voided fæces somewhat better, though still requiring considerable assistance. There was always an accumulation in the rectum. Still showed great pain in urinating. Tail perfectly paralysed. No sensation whatever behind the seat of injury. The horse was recommended for casting, but as it was of course unfit for sale was destroyed on the 15th April.

April 15th. *Post-mortem* examination revealed a fracture of the fourth superior spinous process of the sacrum; also fracture of the posterior articular surface (inferiorly) of the first coccygeal vertebra. Muscles round seat of injury very pale.

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## RECOLLECTIONS OF PRACTICE, OLD AND NEW.

BY W. COX, M.R.C.V.S., NEWCASTLE-ON-TYNE.

*Flooding after Parturition.*—Cases of P.P. Hæmorrhage are not very common, and during more than twenty years of very extensive practice in a large breeding district, I cannot call to mind more than as many cases. These were in both mares and cows, in the relative proportion of six to four, and, considering the lesser number of brood animals in the first as compared with the latter, the number is much larger. Almost all were in *unassisted* deliveries, that is to say, manual exploration had not been resorted to. It was notable that in all the cases parturition was effected standing.

A client, Mr. Frost, noted in the district for his breed of hire horses, had a valuable mare exhibiting signs of foaling; she had



had foals previously, and was notoriously averse to effecting their expulsion in the stable or whilst the attendants were near. She was consequently turned into an adjacent paddock, and occasionally looked at. After lying down and rising several times, she expelled the foal whilst standing, the foetal membranes following in a few minutes; she was then left with the foal for a short time, and on the next visit it was found that she was voiding blood in very considerable volume during the throes; a clot was first expelled, and then fluid blood "as if out of a pump spout," this occurring at intervals. This condition of things very naturally alarmed the owner, and my aid was sought. I found the case as just stated, and I am within bounds when I say that upwards of thirty pounds of blood had been lost. The animal was staggering about, the eyes were bright and anxious, the visible mucous membranes were pallid, sighing was frequent, and the pulse feeble and indistinct.

Even before I commenced my examination I had despatched the men around her for as many buckets of cold water as they could bring, and on their arrival I dashed them with considerable force over the patient, especially over the region of the heart. In the meantime I had obtained two large linen bed-sheets, which I soaked in cold water, and then twisted them spirally, and introduced them as far as I could reach into the uterus, leaving the outer ends projecting externally. The mare was held quietly in hand for an hour, and then slowly moved into a loose box, and an attendant told off to keep her standing, and to supply her with food, everything being cold.

A dose of *Plumbi acet.*, ʒjss, was given, to be repeated in four hours if bleeding recommenced, and at night, to counteract the astringent action of the hæmorrhage and of the lead, a dose of physic was administered. When visited at night she was decidedly better; the loose ends of the sheets were then fastened to the tail, so as to allow of passage for the urine.

Next morning the improvement was still more marked, and several gentle twists were given to the sheets without return of the bleeding. Night visit: feeding well and continued improvement; she was now allowed to be alone for several hours at a time, and was down and resting twice during the night without untoward result.

On the fourth visit, the morning of the third day, on twisting the cloths the mare with a very slight effort expelled them, accompanied with a considerable amount of lochia.

Although the animal was watched, I was careful, after the first night, that she should not be disturbed, considering that rest was indispensable for recuperation, so as to avoid hectic or liability to absorption. Although greatly reduced in condition, she was at

light work in under three weeks, suckled her foal, and subsequently bred several without any casualty.

Mr. Booth, residing near, sent in haste ; he had a cow "bleeding to death." I found she had just calved—standing—and after the foetal membranes came away, "she began to part with blood in jerts." A similar method of treatment was adopted as in the preceding case, and with a satisfactory result.

I have never seen a fatal termination in these cases, although the prostration has been very great—in some, almost to syncope. This good fortune may be due to a reduction of the fluid lowering the *vis-a-tergo*, and reducing the muscular contraction of the abdomen, so that the throes would be less frequent and not so effective in forcing out the blood. The ends of the vessels, too, would retract long before complete exhaustion.

It is quite possible—nay, probable—that untoward results may happen if in our anxiety we do not allow the animal that rest necessary after the excitation of parturition and the depletion following ; we may have hectic with its attendant evils, and the poisoning of the system by the absorption of the morbid discharges, and the patient succumbs a martyr to excess of zeal.

*Broken Knees.*—It is seldom, unless an animal is more than usually valuable or the injury is severe, that our continued attention is called to these cases. In ordinary instances the owner or attendant has a bottle—in this district it is vulgarly termed "tinker," a pseudonym for tincture ; unfortunately it is often so compounded as to be tenacious, and being applied too frequently without cleansing the wound, the dressing and discharges accumulate and form a huge scab, pus forming and spreading underneath to the extension of the area of the wound.

In simple broken knees—that is, where the joint is intact and the bones not injured—after removing the dirt by tepid water the air should be excluded by a double fold of lint dipped in water and *kept wet* ; the lint dressing, especially if the wound is extensive, should be removed twice or thrice daily, and the temperature gradually reduced until quite cold. In hospital practice this cold water system has succeeded admirably, although in exceptional instances, where considerable growth was required, carbolic oil with the addition of *Ol. tereb.* was used. The factors necessary for an early growth with the least blemish are *perfect cleanliness, exclusion of air, at first frequent cold water dressings, and caustic to keep the growth level and the edges below the adjacent skin.*

Whilst speaking on this subject, I feel I must mention a recent occurrence in the police court in this city, as it concerns not only myself, but the honour of the profession.

The matter in question occurred with respect to a horse with a



broken knee ; the wound was a severe one, being wide and deep, and the tissue was cut away ; he was kept in the stable for three weeks, during which time granulations filled up the chasm, and cicatrization was taking place. Naturally there was no *new* growth of skin. At the end of that time, and in fact during the entire period, the horse was taken out and exercised, and he moved *perfectly sound*. Seeing that rapid movement made no alteration in the wound, that there was neither separation nor drag on it, that the horse was sound, and knowing him to be so "fresh" as to be almost unmanageable, I advised the owner to put on a knee-cap as a safeguard, and to work him. The attention of the cab inspector was attracted to him, I should say more from having on the knee-cap than from anything else, and he ordered him in. On my examination I found the wound was in the same condition as in the morning, and that he had suffered no injury from his work. The day but one after he was seen by the inspector for the R.S.P.C.A., doubtless taken by the former inspector to supplement his statement. The evidence tendered was that the horse was unfit for work, that the wound discharged "blood and matter," and that *the animal was lame*. I said that there was neither blood nor matter discharging from the wound, that the surface was moist, and that abrasion would make it bleed slightly is conceivable, but so far as their evidence went, they did not touch it, and there was no appearance of their having done so ; as for the lameness, they had the horse turned round, and brought just out of the stable door, and he was neither walked nor trotted, and yet they said, without this test or any indications, that the wound opened and shut, which I distinctly denied. The case was dismissed.

It is not, however, in respect to the evidence *pro* or *con* in the case that I desire especial attention, but to a statement made by the Society's official. When asked in cross-examination by the solicitor if *he knew that a veterinary surgeon had ordered him to work*, he said, "*If a veterinary surgeon has done so, I should consider it my duty to summon him.*" Individually, I object to be terrorised like a school lad, and will gladly accept the gage that the worthy individual in bravado threw down.

We may talk about "social position," "professional status," and the like in a grandiloquent manner, but if we must accept the *ipse dixit* of such men, it is not only farewell to these, but to all sense of self-respect. I am not going to amuse your readers with accounts of their want of ordinary knowledge, but when they get into a box to air their abilities, they should at least know the meaning of "congeintal defect," or better than to make themselves foolish by the use of mispronounced and misunderstood technical terms. If these things are to be, we shall shortly go a degree further,

and on all such cases have to solicit the opinion of the inspectors (of course with fee), whether our patients are workable or not.

I wonder what would be said in a court to a man who is an expositor of humanity, and who half poisons a dog, pretending that he knows how to do it properly, and then, whilst he is rolling about, places a rope around his neck and strangles him : a double death, and revolting, except to the most hardened. The authenticity of this is undoubted. I have not moved in the matter, lest it might be said to be prejudice on my part ; and further, I am neither spy nor jackal.

*Wounds on the Coronet*, whether small or extensive, often leave a blemish, a protuberance, that, even if the horse be sound, detracts greatly from his value, owing to its unsightliness ; and this is irrespective of the *cause* of the wound, it is not material whether from tread, outside violence, or from Quittor ; of course, the larger the wound the more extensive the blemish.

Years ago I had some trouble in restraining these wounds within decent limits, so far as new growth went. Astringents, caustics, and even the potential cautery were put in use, and in some they were necessary so often as to cause more than considerable pain, and, occasionally, even constitutional disturbance. I do not purpose to enter at length into the treatment of these wounds, except as to the fungus. It is generally found that the chasm is rapidly filled up with a spongy structure, the outer circumference more or less hardened, softening towards the centre, which is perforated, the opening passing to the bottom of the wound. From the earliest stages in ordinary wounds, it is advisable, after the dressings, to put on a *tight, persistent compress*, removing it only for the purpose of cleansing and dressing, discretion being exercised. In Quittor, after sloughing out the interior of the cavity, and making it a simple wound, the same method should be followed.

I have found this system has saved the animal suffering, and myself a lot of trouble, and the cicatrix has been small and level, as opposed to the knotty prominences too often seen. Instead of retarding, it accelerates speedy recovery.

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## A FEW PRACTICAL NOTES ON ANTHRAX.

BY A. E. HOLLINGHAM, M.R.C.V.S., TUNBRIDGE WELLS.

I HAVE had the advantage lately of seeing a few cases of this disease ; it is not a common one, and is often not recognised ; but since it has been included in the Contagious Diseases (Animals) Act, it becomes imperative for every practitioner to acquaint



himself with its appearances, *post-mortem* and otherwise, in order that he may prove or disprove its existence. Of course science would say, why don't you look for the bacillus anthracis? but in ordinary practice how many men are expert enough with the microscope, or have sufficient time to spare for such investigations? Again, in practice opportunity is not generally present; we are taken into a locality, are shown certain animals, and are at liberty to make *post-mortem* examinations, but it must all be carried out expeditiously, and an opinion be forthcoming on the spot to the inspector under the Act (a policeman). Therefore in all these contagious diseases we ought to cultivate the art of quickly grouping such facts and symptoms as exist.

Referring to this particular outbreak, I may say that it was on Sunday, September 25th, when a farmer client of mine called here in rather a disturbed state of mind, to tell me that on the previous Wednesday he found a steer dead in a field where ten other steers and heifers were turned out in company with a mare and foal and a two-year-old colt. This steer was flayed and dressed by a butcher, and hung up to be boiled for pig-food. On the Friday morning the colt became ill, apparently with a sore throat; it was taken down to the farm buildings, and treated by mustard and hot water to the part, and soft food. During the day he was dull, and the owner began to be suspicious that it was not such a simple case as he first imagined, but at the same time he did not think it serious enough to call me in; later on in the evening the throat symptoms increased, but he described them as nothing particularly alarming. The colt was left for an hour at 8 p.m., and on going out again at 9 p.m. he was found dead. The following day the carcass was sent to the local knackers, whose farm and slaughter-house is in another county. On Sunday morning a fine Jersey cow in calf was seen at 10 a.m. to be a little dull, but she was chewing her cud; on visiting the field at 11 p.m. she was also found dead. This field was on the opposite side of the road to the field where the other animals had died, and the cow was by herself.

Such was the history given to me on the Sunday morning. This highly suspicious narrative determined me to begin the necessary investigations that afternoon, more especially as I knew there was a court of petty sessions held the following day, where, if my suspicions were correct, the case could be dealt with. I first visited the knackers' premises, and made an examination of such portions of the viscera of the colt as were available, and also a *post-mortem* examination of the cow. I found the larynx and trachea of the colt full of the remains of false membrane, and the lining membrane removed in patches, which

presented a purply black base such as might result from the application of a hot iron; the tissues surrounding the larynx were much infiltrated and thickened by a bloody gelatinous exudation, the other parts of the carcase were in a condition not favourable for investigation. The cow, however, remained, and from my *post-mortem* notes I find that the most striking appearances were found in relation with the connective tissue; wherever it existed in any quantity it was enlarged and infiltrated with blood and gelatinous material; the tissues around the larynx presented much the same appearance as those of the colt, but the lining membrane of both the larynx and trachea was intact. The liver was slightly enlarged and friable, and covered with petechial spots varying in size from a No. 6 shot to a horse bean. The spleen was about double the usual size, and showed on the surface one patch of spots, and was full of very dark fluid blood; the kidneys also showed spots on their capsules; the pericardium showed a few petechiæ on its surface; the external surface of the heart showed three or four large patches; the endocardium of both ventricles were covered in the same manner, more apparent in the right than the left. Such, in a few words, were the *post-mortem* appearances which came under my notice. It was too late to visit the farm that night, but on the following day I spent a considerable time in trying to elucidate the cause of this outbreak.

The two fields where the disease appeared were situated on high ground, a road running between them, and no other cattle in the vicinity; the feed was grass and hay, and the water supply derived from a pond in one corner of the field containing the steers and mare and foal, and it is to this pond-water I ascribe the infection. In the first place, from diligent inquiry I found that five years previously several head of stock died in this field very quickly one after the other, and now and again since one has died at odd times. In the spring of this year several ewes and lambs were put to pasture in it, and seven or eight were lost in two or three days; they were then removed, and, generally speaking, I found from old people in the neighbourhood that this particular ground had a bad name for stock-feeding purposes (I may say my client had not long had possession). Again, the cow which died in the other field was supplied from the same pond; also this pond was what we term mudded the latter part of this summer, and the mud thrown in a heap on the grass, and for some weeks the supply of water which is derived from surface drainage was very scanty, thus producing a state of affairs which, coupled with the prevailing hot weather, was very favourable to germ growth.

Of course my first care, after forming an opinion, was to have



the remaining animals removed into an adjoining meadow, and their drinking water supplied from another source, in addition to which I directed in the first place that a cathartic should be administered, to be followed by ʒj doses of acid. carb. night and morning. There have been no fresh cases, and one heifer and the mare which at the time of my visit showed suspicious symptoms, have recovered. In connection with this outbreak, I may say that three or four cats have died after eating the raw flesh of the steer, and a dog which partook of some showed bad throat symptoms, was unable to bark, and generally very ill; the owner, having very little hope for it, gave as an experiment half doses of the acid. carb., sent for the stock, and, strange to relate, recovery took place. This is remarkable when we consider the intense toxic action which carbolic acid generally exerts on the dog.

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### REMITTENT ANTHRAX.

BY R. W. BURKE, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, LAHORE.

(Continued from page 350).

It will be seen that the Anthrax microbe, in the course of its evolution, passes through different forms; the spore form—that of longer or shorter rods, chains, etc.—is, in fact, polymorphous. At first it might have been supposed that the shorter rods were accidentally present in the tissues examined, but rabbits inoculated with blood containing these rods show both shorter and longer rods, as well as chains, in the same patient, and which moreover stain alike. There cannot be any doubt, therefore, but that the shorter rods seen by Toussaint and myself are the rods of Anthrax, which not only produce virulent Anthrax on inoculation of healthy animals, and stain readily in the same colouring fluids as the longer rods and chains do, but, as I have found, *produce the longer rods and chains on transference to the system of another animal—e.g., rabbits*. It is evident, therefore, that the morphology of the Anthrax microbe is not sufficient to determine the species.

Altogether, there is a pretty general agreement regarding the contagious (this does not necessarily mean contagion through simple contact of animals) nature of the disease, that it is caused by some specific agent, although that agent was not yet demonstrated, in the case of the present outbreak, previous to my arrival. Every one is agreed also as to a living organism being the cause of so specific a form of fever; and because weakly animals succumb first, and stronger ones recover, we do not conclude that this is simply a disease of starvation or squalor in grasscutters' ponies, or even—in the case of pulmonary complications so frequently pre-

sent in this disease—due to exposure. In Paris, cold has been lately applied to dogs in iced chambers, the hair being shaved off on one side till they were collapsed almost, and yet in *no single* case did disease of the lungs ensue. It is probable that neither exposure, nor poor feeding, nor filthy surroundings, are more than the aiding causes of a serious outbreak of this disease, and it is an already proved fact that the *Bacillus Anthracis* in the air, water, or food is the *fons et origo mali*. With regard to the pathological condition of many of our so called “new diseases,” we are still in the dark, though it is probable they are of the same nature as many old, and sometimes familiar, diseases, and differ only in minor physical characteristics of intensity, mode of appearance, and other features.

A symptom to which special attention should be directed is motor disturbances. The motor affection was shown by the frequent paraplegia, twitchings and spasms of the muscles, and affected the muscles of the hind legs in particular, producing Stringhalt, unsteady gait, etc. Symptoms allied to the above are not uncommonly noted in many outbreaks of Anthrax among horses in Australia (See VETERINARY JOURNAL, September, 1878, p. 211.) These symptoms point to capillary plugging, and effusion on, and affection of, the circumvascular connective tissues of the motor apparatus of, the brain and the spinal cord as their essential pathology. There can be no doubt about these changes being due to the multiplication of the *Bacilli Anthracis* in the capillary blood vessels and their escape outside the vessel walls. This explanation appears all the more feasible when we consider the rate of multiplication peculiar to the Anthrax microbe. These cases of partial paraplegia, without paralysis, form at the same time the transition to the “masked” state of complete loss of power behind, noted in many former outbreaks of Anthrax in the horse. The belief that all the motor loss is due to the plugging of the capillaries is not difficult to explain; the *Bacilli Anthracis* increase with marvellous rapidity outside the vessel walls, as in chicken-broth and other cultivation media. The rapidity with which animals lose flesh in these cases is also characteristic of Anthrax. In this disease, where a metamorphosis of the whole of the body has begun, the cells are no longer capable of performing their function; and so we find that the animal wastes away, even when he consumes a fairly large quantity of grass, and is on extra ration during the time of his illness.

Regarding the course of the disease: A very important research, bearing on the conditions of infection of specific diseases, has been recently made in England. In this research it has been pointed out that the initial dose of virus is of great importance, and in



several instances exercises a marked influence *on the course and virulence of the disease*. Various laws have now been made out—for example, the pathogenic dose of a virus varies inversely with the predisposition of the animals to the disease in question; in animals not very susceptible to a disease, the severity of the affection varies directly within certain limits with the amount of the virus introduced, etc. It is found that in some cases a small dose of a virus produces only a local effect, while a larger dose kills the animal, and the small dose often protects the animal from the fatal effect of a subsequent large dose. Although it is as yet impossible to measure predisposition, and thus to decide the dose for any animal, still the knowledge of the relation between these two factors is of great importance in throwing light on the manner of spread in many outbreaks; while the fact that a considerable quantity of the virus is in many cases necessary for the production of a disease explains many anomalies, and affords indications for preventive measures.

We have a better reason than has existed before for believing that the subject of equine fevers promises soon to assume something like definite proportions, corresponding in some degree with the fevers seen in man. The careful studies which have been made of late years concerning the fevers peculiar to the lower animals have supplied the groundwork for the rational treatment of certain hitherto ill-understood cases. Only recently Mr. J. H. Steel, A.V.D., has drawn attention to Relapsing Fever in equines, and Dr. J. Bland Sutton, of London, has taken up the study of Typhoid Fever in animals—each of whose labours promise good harvest of results in the not distant future. No other subject is so replete with interest as that of fevers seen in the lower animals, and although the subject has been somewhat shrouded in mystery in the past, we now have at least the prospect of improvement. The facts and conclusions under any circumstances take some time to collect, but when a general system of inquiry has been encouraged, important solutions will be forthcoming, proving many of our former ideas about disease to be both obsolete and useless. This has been very much the history of all the specific diseases; our notions with regard to the causes of these having been completely revolutionised within the last few years only.

We are of opinion that a careful study of the disease called Influenza in the horse would lead to its being divided into three or more distinct affections. Further, we think that the distinctive characters of different forms of fever in the horse are such as in practice could not allow them to be confounded any longer—an opinion which all subsequent observation must tend to confirm. We may have Remittent Fever and remittent type of Anthrax in

the horse, and although the two fevers are essentially distinct, the one might supervene on the other.

*Treatment.*—The three essential points in the treatment of this disease are, it is obvious, change of air, change of water, and change of locality on the first appearance of suspicious cases. Such indications are not fulfilled by the ordinary plan in vogue of drugging animals. It was change of locality which practically checked the disease in the last outbreak among the horses of the 19th Bengal Lancers Regiment, as previous to it no plan of treatment or prevention had the slightest influence for good. When a few cases of this disease occur in any regiment, the risks of an enzootic attack are considerably increased by keeping animals in an Anthrax-contaminated locality week after week. Simple segregation of affected animals does not suffice to keep the disease in abeyance. The animals must quit with the least possible delay, in order to avoid infection from the tainted ground. Extension of the disease is kept up for months by persistent occupation of tainted lines, until considerable loss has been experienced. In order to obtain a favourable result from our endeavours at prevention, it is necessary to sacrifice the cost of a new flooring, and have recourse to prompt and effectual removal of tainted earth. We must acknowledge that, whilst firmly convinced that dozens of animals may be easily saved by timely adoption of the above-mentioned precautions, there are great difficulties and disappointments inseparable from the carrying out of proper segregation, which I believe to be the chief causes of these failures. One great cause of failure, I believe, is inequality of the measures adopted in different outbreaks, when the proper time for prevention had been allowed to pass by. The probability of an extension of this disease depends less on the special nature of preventive treatment recommended than on inefficiency of such measures as are often employed. The running at large of grasscutters' ponies during an outbreak of this disease is a frequent cause of diminished usefulness of preventive measures which are adopted. Veterinary Surgeon (1st Class) Clayton has forcibly brought this to notice in the case of the disease seen in the 8th Hussars; since his report was made, no fresh cases have appeared among the horses up to date. It is often forgotten that the most critical time for securing the movement of suspected animals is when the disease is absent in others. It is necessarily of greater importance to avoid contracting disease, than merely to attempt to suppress it among an already infected lot of animals. The extreme importance of preventing at every point the chances of entrance of the contagion into untainted lines cannot very well be exaggerated. *A knowledge regarding the period of convalescence*



is of importance in preventing risk of infection by exposure of healthy animals to one which may have just recovered from an attack and be still convalescent. Anthrax may be communicated by the sick animal when the severity of the illness is past, and while recovery is being perfected, since every secretion and excretion of the body in this disease is a carrier of infection. Too great care cannot, therefore, be taken, so long as cases of this disease appear, in preventing a return of apparently recovered animals, which are at the time even more dangerous than when suffering from an acute attack and unable to move about. Undue alarm should be avoided, but we must insist on the importance of fresh air, fresh water, and change of locality, above all, in the treatment of suspected animals. Recent observation shows that a certain local and seasonable condition is essential to the spread of Anthrax, these two factors being found in a porous material, the soil, penetrable by air and water, and soaked with organic substances (local predisposition) and in variations in the moisture and temperature (seasonable predisposition). The first essential condition of Prophylaxis is immediate evacuation of the tainted ground, and checking contagion by early isolation of the sick, and by observing the necessary precautions which stave off an attack among the healthy animals. Immunity is also obtained by guarding against exposure, want, and debility in the case of grasscutters' ponies, this precaution being found necessary, since transmission of the disease, in these, is often dependent upon constitutional weakness, or upon degrees of predisposition and susceptibility. Acting upon our experience of former outbreaks of Anthrax, we may formulate the following rules of prevention, namely—

(a) Not to return any animals as "fever free" without having first ascertained, either by the use of the thermometer or other means, that such is the case.

(b) To remove the conditions of soil favourable to the growth of the microbe, the infected standings must be renewed. The prophylactic treatment of tainted localities by enforcing rules of sanitation, and by avoiding the pollution or infection of the earth with Anthrax material—cadavers, the manure or offal of diseased animals, will always be the chief means of preventing an outbreak of the disease.

*Protective Inoculation.*—It is a great satisfaction to learn that the Government of India have under consideration the question of bacterioscopic laboratories being opened in many central stations in India; because there can be no question that such laboratories are necessary, where Anthrax-"Vaccine" can be prepared for distribution to the different mounted branches of the service, as well as in the agricultural districts throughout the country. Looking not only to the interests of the army, but to the neces-

sities of British India, the death-rate from Anthrax in all classes of animals is a terrible calamity, and every Government should do its utmost to avert it. The entire tendency of modern inquiry is in favour of protective inoculation; enormous saving to the country may be effected by organising central laboratories in India for the purpose of sending "vaccine" fluid into the agricultural districts; and it is difficult to see how postponement of such an evident means of saving to the country is possible. In some parts of Russia, where Anthrax is very frequent, carrying off some thousands of animals of that country annually, preventive "vaccination" has reduced the mortality from this disease to two per cent., as in every other country in Europe. It may therefore be considered as the most urgent necessity which the Government of India have now under consideration.

*Literature.*—Quain's *Dictionary of Medicine*, arts. "Anthrax" and "Remittent Fever"; Roll, *Lehrbuch der Pathologie und Therapie für Thierärzte*, 1885, art. "Milzbrand"; Dr. Wallace Taylor's "Report on a form of Paralysis affecting ponies in British Burmah, otherwise known as *Kakke*," 1881; Baels, *Zeitschrift f. Clinical Med.*, 1882; Ballet, "On a form of Paralysis consecutive to Beri-beri," *Société Anatomique*, July, 1883; Kœniger, *Archives f. Clinical Med.*, 1884; Mendes, *Gazette Medical*, Oct., 1884; Shirley Deakin, "The Pathology of Obscure Œdema in India," 1886; *VETERINARY JOURNAL*, 1878 and 1886; *Il Medico Veterinario*, March, 1876; Quain's *Dictionary of Medicine*; Murchison on Fevers; "Practice of Medicine," by M. Charteris, 1881; "Theory and Practice of Medicine," by Bristowe, and others.

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## PROTECTIVE INOCULATION FOR CONTAGIOUS PLEURO-PNEUMONIA.

BY J. A. NUNN, F.R.C.V.S., F.R.G.S., ARMY VETERINARY DEPARTMENT,  
SOUTH AFRICA.

As of late the question of protective inoculation against bovine contagious Pleuro-pneumonia has been prominently before the profession, perhaps the following instance of the value of it may be of interest to your readers. A gentleman, resident near Pietermaritzburg, had occasion to go on business to the gold fields at Barburton in November, 1886, taking with him three Cape waggons, drawn by oxen, of which altogether he had fifty. He returned about January 1st, 1887, to Natal, leaving the oxen at Ladysmith, the terminus of the Natal Railway. Round Ladysmith Pleuro-pneumonia was rife, and very shortly he received news that one of his oxen was attacked by the disease. The



animal was slaughtered, and, as no further cases appeared, the rest were brought down to his farm, but had not been there many days when three more were attacked. These I saw, and had an opportunity of making a *post-mortem* examination, and the disease was most undoubtedly contagious Pleuro-pneumonia. Fourteen of the cattle had been inoculated two years previously, and with the exception of working in one particular waggon, were treated exactly the same as the rest. The remaining thirty-four were inoculated from one of the three bullocks I saw in the end of January, and of these seven died, making a total of eleven deaths amongst the thirty-six unprotected; but not a single one amongst the fourteen that had been inoculated two years before, and had been exposed to exactly the same influences. Inoculation, as a preventive against Pleuro-pneumonia, is very largely practised in South Africa, both by Europeans and natives, and the inference I have been able to draw from the observations I have made in Natal is that, if the animal is in the incubative stage of the disease and is inoculated, that he succumbs rapidly; but, if not, that protection is given for, at all events, two years, if not, as I have every reason to believe, longer. The inoculating virus is obtained from an animal that the disease has manifested itself in for about seven days, and which is killed, this being a point on which the Natal farmers lay particular stress. A portion of the lung is then placed in a clean vessel, such as a bowl or deep dish, to allow the serum and fluids to escape. A piece of lamp-cotton is put into it to act as a syphon, the fluid being collected in a second vessel at a lower level. As it drops over from the syphon, small pieces of cotton or tape are placed in it, and these are inserted into the under part of the tail as setons, and the animal let go. Great attention is paid to using the virus as fresh as possible, to the fact of the disease being as near the seventh day as possible, and the animal from which it is obtained being destroyed, not allowed to die.

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## NOTES ON PURPURA HÆMORRHAGICA IN THE HORSE, WITH A FEW REMARKS ON THE MICRO-ORGANIC FORMS MET WITH IN THE SAME.

BY F. C. MAHON, M.R.C.V.S., SOUTHSEA.

THE opening of a Laboratory specially dedicated to the pursuit of bacteriological studies and researches into the life of micro-organisms, is an epoch in the history of the "Germ Theory," which at the present moment occupies so important a position in the scientific world, and especially to those of both medical and veterinary professions, between whom much exists, or should, in

common, especially relative to those intercommunicable diseases of man and the domesticated animals. Not a few of these could be prevented if the relation of animals to man were well understood, both as regards the consumption of flesh and the milk supply, and also intercommunicable diseases by inoculation from them, chief of which may be mentioned Glanders and Anthrax. The controversies respecting hæmal diseases divide themselves into two classes, especially so in the case of the disease now under notice, viz., Purpura Hæmorrhagica. Briefly, a divergence of opinion has long existed as to the chemical, chemico-physiological, and micro-organic theories of this affection, and though an important disease in the rôle of hæmatinic complaints, has never been satisfactorily placed in the true sense of classification.

The views of such able contemporaries as Prof. Limont, Glasgow, and Mr. F. Smith, A.V.D., on the organisms met with, and the chemical analysis of the blood respectively, have of late occupied the pages of the VETERINARY JOURNAL. The vexed question, however, will remain still, until, like other Hæmata, it is thoroughly investigated, both chemically, histologically, and pathologically. Like diseases of a hæmal nature, and approaching in many of its clinical features to Anthrax, and especially where the swellings, peculiar very often to the head, neck, and throat, are most prominent—to Gloss-Anthrax, likewise also Pyæmia and Septicæmia, where oftentimes it has some little connection, these being proved to be of a micro-organic nature—Purpura is an affection where a field of inquiry stands but little trodden, and we are at a loss yet to supply any good grounds for satisfactory data of origin and classification. It is with diffidence I beg to support the statements of Prof. Limont, relative to the micro-organic forms met with in seven patients who had succumbed to this disease—that is, the three distinct and fertile organisms met with, beside auxiliaries which, in such diseases as Influenza, Pyæmia, Septicæmia, and even in the blood of healthy animals, we find not only in the blood, but tissues. By many, chemical affinities play the chief rôle in the pathology of Purpura, an altered blood system, and contained blood elements, with putrefactive and fermentative changes now and then resulting. By others, and a larger school of scientists, it has yet to share many diseases, which of late years have figured prominently in our country, viz., Glanders, Foot-and-mouth Disease, Anthrax, Swine Plague, etc., etc., such being due to the invasion of micrococci, bacilli, and bacterial forms of various divisions of the vegetable world. To supplement Prof. Limont's views is to share with him a knowledge of the three distinct forms enumerated in the August number of the VETERINARY JOURNAL, and which, I trust, will but be a prelude to a rigid exposure of the



disease, by those who are placed mostly in contact with the affection, and whose hands are at liberty to devote to a study microscopically of its blood and exudative fluids. As yet, we cannot but add that the organisms play a secondary part in its causation, as no experiment with the chief rod-shaped bacilli met with has yet been made, and as the exudate from the bacterial forms of disease, or an altered pabulum by their invasion in the blood stream and animal tissues, is believed by many to be the chief agent in disease production, this will doubtless have to be considered duly. In all of the seven patients who succumbed, bacteria, chiefly the rod-shaped bacilli, occupied a prominent position, being found not only in the spleen and splenic vessels, but likewise in the posterior aorta, heart, abdominal vessels, and jugular, together with that of the phlectynæ in the thoracic and abdominal organs, and contained exuded fluids, exudation from the blood conduits being a well-marked occurrence in Purpura. The rod-shaped bacilli are in length midway between *B. Anthracis* and *B. Tuberculosis*, showing no signs of spore formation, as in Anthrax.

In the jugular and posterior aorta, micrococci—both coccal and diplococcal forms—abounded, also in the exudations into the connective tissues, abdominal cavity, and in the serosity of swellings of head and throat. "*Streptococcus Pyogenes*" I found in the blood of a patient who lingered for thirteen days, and where grave structural pathological changes had ensued—aged cart-horse. Hygienic arrangements being below par, the animal over-worked also, and surroundings of a moist, damp character.

The organic forms found in the blood in Purpura Hæmorrhagica, and in the exudate thereof, are not distinct from the organisms met with in Pyæmia and Septicæmia, except the well seen and numerous variety of the rod-shaped bacilli, approaching the red corpuscles, touching them occasionally, chiefly segregated, occasionally found in twos and threes, at right angles, not found however in close proximity to the white. Just as an animal is predisposed by debilitating influences—climatic and dietetic, and subservient to the wants very often irregular of man, by agents chemical, that is fluid or solid particles of protoplasmic nature, entering the system by air, food, or water, producing death, by destruction of blood elements, loss of oxygenating power, anæmia, and death, with changes resulting in softening, destruction, or proliferation of cell elements, the endothelial lining of the blood-vessels, so we give these changes well marked here.

The causes enumerated by many of Purpura lie chiefly in hæmal poisons, defective hygiene, improper drainage of habi-

tations, housing, food, and work, with water supply, often contaminated by sewage, or by plants and substances undergoing chemical and other disintegration, noxious effluvia permeating the air respired, rendering them impure and so noxious and destructive to animal vitality. Such in over-crowded stables of bygone days, faulty in many particulars, still pertaining even to many modern; and it is here that hæmal diseases occupy not only prominent positions, but are less amenable to treatment, are prolonged in their stay, leave sequelæ of a character, lowered vitality, and defects of locomotory organs, but, chief of all, structural changes in the organs of organic life. Purpura I have met with following not long after an attack of Strangles, and Richard W. Burke, A.V.D., recently records a case following upon an attack of Rheumatism. The cachexia established by the above agents leaves a lesson which is within the reach of prevention, and doubtless will, when the disease is thoroughly known, lessen its frequency and effects. Taking a percentage of horses met with in town and country practices, where any large number of horses are at any time collected together, subjected to the above-mentioned influences, do we not find Purpura here present, in its most severe and fatal nature?

"Diabetes insipidus" is occasionally a precursor of Purpura, and it follows also a disease, which of all diseases, with perhaps the refined divisions of Continental writers, as an exception, viz., Anthrax. Considered from a natural history point of view, are the micro-organisms met with in this complaint capable, by chemical agents, of being transformed at certain periods of tissue changes? and when controlled, by external media, of being transformed by such, from non-pathogenic properties to pathogenic, for in such chemico-physiological and auxiliary changes due to the bacterial concomitants finding now a fertile soil, and allowing of morbid changes? F. Smith, A.V.D., in the August number of the VETERINARY JOURNAL, has furnished a long-wanted chemical analysis of the blood, with comparative changes of excess or diminished chemical changes in purpuric as compared with normal blood. And from this is gathered the excess of those materials in which micro-organisms find a suitable pabulum for growth, increase, and play, viz., a deficiency of fibrine, iron constituents lessened, watery elements likewise, and, with such alterations in the contained fluid, structural alterations following.

Induced last year to pay some little attention to many of the phases of Purpura, and examining casually some specimens of tissues and blood of patients, and suspecting bacterial causes, I met with the organisms hitherto referred to, and the well-marked bacilli, by Cohn's method of staining. In the sperm of a rabbit



inoculated with purpuric blood, also in ecchymosed patches on the left side of the heart (endocardium), these bacilli were discovered. Further, that the *bacilli* found in the blood, and exudate from the circulatory system, is distinct, insomuch as they do not correspond in many details with any other recognised bacilli of such diseases as Pyæmia, Anthrax, Glanders, etc.; that they approach closely in position—that is, direction—to the “bacilli septica” of Billroth. Experimentation may prove non-spore formation; may be an organism exists distinct even from the three forms alluded to, and if it is possible for a non-pathogenic organism to be, altered fluids become pathogenic, it is not beyond reason to suppose a like change here. As an animal system, rendered by causes enumerated hitherto, so well known to all, predisposed to harbour organic forms, should alone of many hæmal affections, prove an exception, cannot long remain, and that the pathogenic organism, for undoubtedly it will share the fate of many allied affections. The well-deserved tribute of praise to the discoverers of the organism of the terrible malady known as Glanders, by the old school of practitioners, and even in this our own day, held by many who are bigoted in their opinions, and hold opinions very often foreign to reason, should be paid, as doubtless it will, to the discoverer of the pathogenic organism of Purpura, or if it can be proved to be allied to many or one affection, its nature chemical, or chemico-physiological, with germ auxiliary production assisting its *ætiology*. If also a particulate substance in the future be found existing in animals, the subjects of this disease—a substance which can be measured and secured by the scientific instruments of the present day—this, with the ultra theory, sustained by precedence, by knowledge of everyday contact with diseases of a hæmal character, the organic theory will be such, when the organism or organisms met with be each, or all, proved to be cause, not effect.

Germs enter the animal system in many ways: by (1) Mucous membranes, especially where abrasion, or denudation of epithelium be present, or loss of vitality by agents chemical, or otherwise, *via* air-passages. (2) Alimentary canal, by water, food partaken of accidentally, or by natural means. (3) By wounds, or abrasions on the skin, and many others of a minor character and intensity, relative to the three distinct and great divisions above named.

In alluding again to the natural history point of view, as to whether bacilli of harmful properties are rendered so, that is, pathogenic, by chemico-physiological changes in the blood, tissues, and exudate, in which the organisms move and have their being, at least for a variable period during their life-history; and have we here a bacillus, which, finding an altered medium, a suitable soil, is convertible by the same means as *Bacillus subtilis* into the patho-

genic B. Anthracis, or *vice-versa*? There is only one test remaining for such, *viz.*, prolonged and protracted experimentations in culture mediums with inoculatory experiments with such animals as form suitable media for such purposes, as in diseases classed as the contagia, so familiar to all.

To esteem disease germs as occurring in the body without previous infection, and as a result of morbid processes are maintained; some maintaining they may exist in all living and healthy animals, and are not the inducing factors of disease production, only proving so, when in increased numbers, and under the circumstances favourable, of a physiological or chemical nature.

Cases have been cited where after the use of the actual cautery in horses for Spavin, or bony exostosis of the limb, Curb also, another pathological change—Purpura hæmorrhagica—has resulted. Was the cause here hidden, or in abeyance, until the nervous changes, or hæmal, brought about by the shock on the system, revealed and provoked the elements of Purpura into disease play? Could this truly be Purpura, or was death purely Pyæmic, or Septicæmic? Professor Limont cites:—

1. Cocci, minute.
2. Large cocci (*Streptococcus Pyogenes*).
3. Rods—the latter in all cases seen by me, where the spleen was markedly involved.

Bad sanitary arrangements are thought first to occasion a contagious disease, but such statements are fraught with absurdity; they act only as a predisposing cause in two ways. (1) Directly, by inviting germs. (2) Indirectly by deteriorating the animal system, weakening its functions, and rendering it directly susceptible to bacterial onslaught.

Whether Purpura will be added to the list of a large group of diseases producing results, as having their origin in animals, and acting upon man, being those which operate through the ingestion of animal tissues as food; whether, also, parasitic existences, or specific diseased conditions are adduced, which exert their power of disease induction, by direct implantation from without of germs inimical to healthy vitality and longevity of animal life, and are there organic entities, or minute particles of specially formed protoplasmic matter, capable of changes. In altered suitable media, bacteria cannot exist where gases are given off, according to many eminent authorities; the organic forms existent in Purpura would therefore not gain exit from bad drainage, noxious gases, etc., or in very limited number, and so be productive of but little harm. The quivering motion which is also seen or exhibited by lifeless and inorganic matter (Brownian movement), is not seen in the inorganic matter pertaining to purpuric blood.



By transudation, *i.e.*, motion from one place to another, we prove the difference between bacterial organic life and inorganic germs usually present in water, as Dr. Burdon Sanderson has demonstrated, and Professor Tyndali has obtained germs from the centre of a block of ice. Bacteria are not only associated with fermentative changes in fluids, but also stand in a casual connection with various diseases. This they do in two ways, either by producing changes in the fluids leading to the formation of poisonous products, or by growing in the blood and tissues of animals, thereby leading to disease and death.

That the products of the growth of bacteria in albuminous fluids are of themselves poisonous, was long ago made out by Panum, who found that putrid fluids, boiled and filtered, so as to get rid of all bacteria, still caused Fever, by injection in large quantities, also the death of the animal.

Malignant œdema is a disease in which bacilli grow in the connective tissues, not in the blood-vessels, and cause inflammation and rapid death of the animal. They are shorter than the *Bacillus Anthracis*, and cannot grow in the presence of oxygen. They also produce spores.

Whether here we have a soil, by chemico-physiological changes rendered a suitable soil for bacterial invasion, is still an open question, and if, as above seen, bacteria can grow in an albuminous medium, they of themselves primarily of a non-pathogenic nature, but altered here, or altering, through changes in the blood of an albuminous character, but we have reasonable grounds for deductions and argument. The *post-mortem* appearances of *Purpura* closely simulate Anthrax, and it may yet prove an allied affection, though in no case have the bacilli of Anthrax, the cause, *par excellence*, of the latter affection, been seen. Unlike Anthrax, however, it does not appear as Anthrax in its varied forms, as capable of propagation by infection or inoculation, nor has there yet been demonstrated to exist in the blood of animals suffering from this disease the specific organisms of pure Anthrax. The local swellings, too, both as to character, mode of development, etc., and relation to the termination of the disease, are totally different in *Purpura* from those of Anthrax. It is probably a neurosis which, inducing changes in the circulatory system, favours the habitat of micro-organic forms, which probably play a part in fermentative and putrefactive changes. Following Influenza, Strangles, or even common Catarrh, diseases in which the nervous system suffers primarily and markedly, it seems worthy of some consideration of this view of its nature.

The experiments carried out by myself on a few animals may not be acceptable, for we require animals of the same nature to prove many of the properties of those agents which produce

Purpura ; they are here enumerated briefly. They were confined to dogs, guinea-pigs, and rabbits :—

1. Concerning the dogs, two in number. Inoculation—intravenous (jugular) produced *nihil* ; food, *i.e.*, uncooked meat, taken from the face of a patient who succumbed, produced no visible symptoms, nor was any change evinced by them after partaking of the blood of the same.

2. On the rabbits (inoculation, intravenous, per jugular). Blood-poisoning (septicæmic) resulted on the sixth day ; 50 minims of blood taken from the jugular, and 20 m. from the exudation in the swellings of the head and lips being intermingled.

(b) No. 2. On this rabbit no effect when inoculated with materials from the spleen into back of ear.

3. With the guinea-pigs, however, I had different results. The rod-shaped bacilli were discovered, though in limited numbers, here in the heart and spleen, death resulting on the eighth day after inoculation.

But until further, more extensive, and finished experiments are conducted with blood and exudations, and inoculatory experiments be adduced, and cultured mediums used as the chief fluid, it must still remain an ill-understood or satisfactorily understood affection.

It is rare for mares or stallions to suffer from the affection ; perhaps there are some who can adduce cases, however, where exception could be taken.

In concluding my observations relative to *Purpura hæmorrhagica* in the horse, perhaps it will be in the power of older men, more experienced than myself, to add to our knowledge of the affection, and prove or disprove much that is here brought forward, more as a corroboration and argumentative basis, than from any desire to infringe on the tried knowledge and experience of abler veterinarians. Whether now Purpura will share with Anthrax, Glanders, Tuberculosis, Swine Plague, etc., the fate of being due to bacterial invasion, or whether, with chemical, chemico-physiological changes, as auxiliaries in production, remains still in abeyance.

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## Editorial.

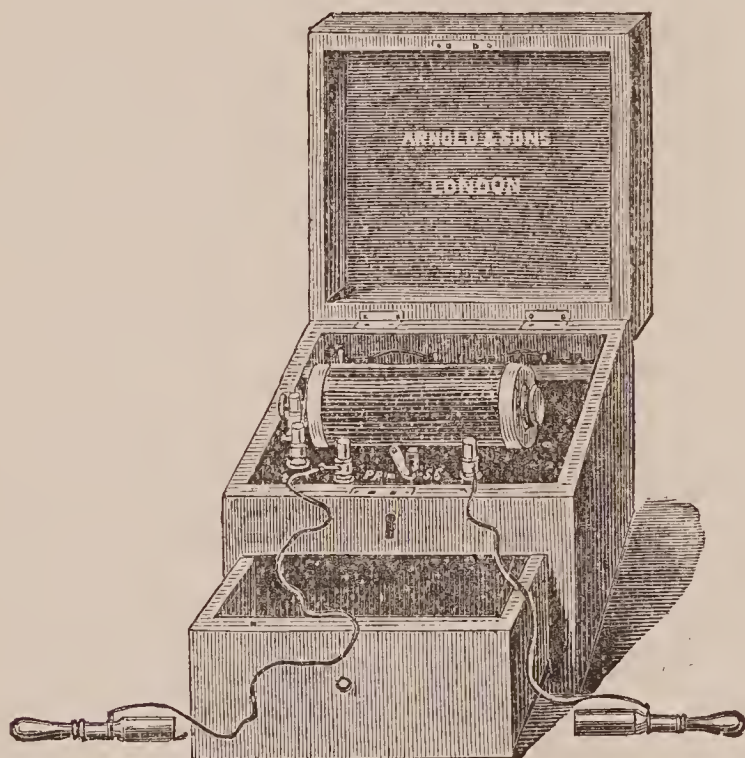
### ELECTRICITY AS A THERAPEUTIC AGENT.

It is somewhat remarkable that electricity as a therapeutic agent in veterinary medicine has been nearly altogether overlooked in this country. In our text-books—and they are now somewhat numerous—little or no mention is made of it, and the notices of its employment in the treatment of the diseases or defects of animals which have appeared in our journals, are extremely few and meagre. On the Continent it has certainly received more attention, and has been studied and applied as a remedial measure by such veterinary notabilities as Hering, Lafosse, Bourrel, Mairemangin, Legier, Rodet, Brogniez, and Tripier. Needless to remark that in the medicine of mankind it is extensively employed for various purposes, and in nearly every hospital there is an electrician whose business it is to apply it in those cases for which it is deemed most appropriate. Its value as a stimulant to excite muscular and nerve tissues which are the seat of paralysis, is universally recognised; while its effects as a stimulant to nutrition generally are undoubted. Its chemical action has even been successfully employed in dissolving tissues and coagulating blood within aneurismal sacs, and its thermal effects are often resorted to in surgery for heating cauteries.

If electricity is found to be so advantageous in human medicine and surgery, surely its aid might be invoked by veterinary surgeons in those instances in which its employment is indicated. It has been tried, and with satisfactory results, in cases of special fevers in the horse; in Chorea in the dog, and in paralysis due to muscular atony or defective nerve conductivity it has been employed with benefit; also in Colic due to diminished peristaltic action of the bowels, tardy contraction of the uterus in parturition, in synovial distention of joints and bursæ, in herniæ, and for the relief of pain. Quite recently it has been most encouragingly experimented with in “roaring” in horses, and there is every reason to believe that, but for its employment, one of the most famous racehorses this country has ever produced—the Duke of Westminster’s Ormonde—would not have achieved his late victories at Ascot—victories which crown a career on the turf unmarred by a single defeat. In such cases, the electricity applied systematically and skilfully, preserves muscular tissue in health until the brain or nerve which excites it regains its function.

The scope for the employment of electricity in veterinary practice should be somewhat wide and varied, and we may indulge in the hope that electro-therapeutics shall receive some attention from those among us who are desirous of enlarging our curative resources. What has militated somewhat against our more frequently seeking its services has been the want of a battery specially adapted for veterinary use, but we

fancy this deficiency has now been made good by the instrument manufactured at our request by Messrs. Arnold, of West Smithfield. This battery consists of four patent Leclanché cells, to which is attached a Faradiac coil. The strength of the current is easily regulated by means of a graduated rod, which denotes its intensity, while the battery is arranged with primary and secondary currents, with commutator. The construction of the instrument is such that it is impossible to close it without interrupting the current—a great advantage in veterinary practice, and on opening the lid the action is at once resumed.



In addition, the conductors are made of unusual length, so that the battery may stand on a chair or even on the floor, while the Faradisation is practised upon the animal patient.

These improvements will simplify and facilitate the application of electricity in veterinary practice, and render resort to it less repugnant.

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## STUDY OF A BACILLUS CAUSING NEPHRITIS IN THE OX.

BY PROFESSOR S. RIVOLTA.

THIS disease has been observed as an enzootic in the Roman Campagna during the summer, particularly in pure bred Swiss and Dutch cows that have been recently imported.

Professor Vogliata recognised the disease as what has been described by Metaxa as "Ataxo Dynamic Nervous Fever," by others as "Pernicious Fever" and "Hematuria," with the following symptoms:—At the first onset elevation of temperature to 39° or 40° Centigrade, the urine turning a dark red colour with a greenish tinge through it. The animal becomes dull, the coat stands up on end, the eyes sunken, the mucous membranes tinged with yellow, and the fæces hard. Motion is difficult, the hind limbs being moved with difficulty. A little later rumination ceases, the temperature rising to 41° Centigrade. The urine becomes coffee coloured, muscular spavins set in, and



the pulse is very quick. The temperature then rises to  $41^{\circ} 5$  Cent. to  $42^{\circ}$  Cent., descending rapidly to  $39^{\circ}$  Cent. or  $38^{\circ}$  Cent., the animal dying without being convulsed. Abortion is a frequent complication.

After death the blood is found black and fluid as in Charbon, the intestines congested, the liver yellow and engorged with blood, the spleen tumefied and nodulated on its surface, the bladder distended with bloody urine. The lungs show sub-pleural hemorrhagic patches, and the endocardium petechiæ. Professor Rivolta has discovered a short fine bacillus in the blood differing from that of Charbon under the microscope, but not in preparations made with the pulp of the spleen or the liver. Sections of kidney showed sub-acute interstitial Nephritis, as well as the bacillus found in the blood, which was demonstrated by Gram's method. They were present isolated, and united in twos and threes, straight, curved, and bent at an angle, with an imperfect segmentation. Their length varied from  $\frac{2}{1000}$  to  $\frac{5}{1000}$  and their breadth  $\frac{1}{1000}$  of a millimetre. These bacilli were never found in the spleen or other parenchymatus glands, although their presence in the blood would indicate their presence.

Inoculations on the rabbit and pig had no results, neither had they in those that were made on cattle; and the author arrives at the conclusion that results are only obtained in animals previously predisposed. The conclusions he came to from his experiments are:—

1. That a sub-acute interstitial nephritis exists in cattle, due to a specific bacillus.
2. That this disease, with its accompanying complication of Hematuria and Hemaglobinuria, causes obstruction of the omasum.
3. Many bacilli coloured with gentian violet show their protoplasm in the form of a small round mass.
4. In the kidneys they multiply by division, and are transported by means of the lymphatics and blood vessels.
5. The majority of the short bacilli appear to have their habitat in the lymphatics.
6. The bacillus, from its irritant action on the kidney, Rivolta has named the "*Bacillus nephritis bovis*."

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## THE MICRO-ORGANISM OF TETANUS.

BY DAVIDE GIORDANO.

SOME experiments performed in the laboratory of Professor Perroncito, were made on animals inoculated with various pathological products, obtained from a man who died of Tetanus after an accident in a hay loft, which caused severe contusions, accompanied with wounds.

The necrosed tissues from the wounds beaten up in a mortar with sterilized broth, were inoculated into the conjunctiva of three guinea-pigs without any result. The microscopic examination of this necrosed tissue showed numerous micro-organisms, but not the bacillus described by Nicolaier and Rosenbach.

Inoculation made with a culture from this solution, from blood from the wound, the neighbouring nerves, the spinal cord, and the splenic pulp, gave no results. A drop of a cultivation made from a drop of pus obtained from the sheath of one of the vessels of the arm of the patient was inoculated into the cellular tissue of a guinea-pig. Rigidity of the members appeared the third day, which became general the day afterwards. A purulo-sanguinous discharge appeared at the point of inoculation, in which, with difficulty, a few of the bacilli of Nicolaier and Rosenbach were discovered amongst numerous other bacilli and micrococci.

A guinea-pig inoculated with a cultivation of blood taken from the wound died of Tetanus in twenty-four hours. A hemorrhagic exudation very rich in micrococci appeared at the point of inoculation.

One drop of this exudation inoculated into the loins of a small pig produced Tetanus in twenty-four hours, which commenced in the posterior limbs, gradually extending forwards. In the pus at the point of inoculation the bacillus of Nicolaier was discovered.

Particles of earth and bits of straw had been discovered in the wounds of the man dead of Tetanus.

A. A small portion of this *débris* was introduced under the skin of a guinea-pig, causing death from Tetanus the third day. The pus at the point of inoculation contained a number of different organisms.

B. A second guinea-pig inoculated with a drop of this pus died in twenty-four hours. In this there was but little pus at the point of inoculation.

C. A large rabbit inoculated with a drop of pus from this last guinea-pig died in twenty-four hours with *Opisthotonos* and *Trismus*.

D. A guinea-pig was inoculated without result with the spinal cord of the guinea-pig A.

E. A rabbit was inoculated with a drop of pus from the rabbit C. Two days afterwards the classic symptoms of Tetanus were present, and death ensued the same evening.

F. A rabbit inoculated subcutaneously with a cubic centimetre of water in which the earth adhering to the wounds of the man had been mingled, gave no result.

G. A rabbit inoculated with a culture of this earth six days old, died of Tetanus on the third day. This culture contained the bacillus of Nicolaier and Rosenbach.

These facts seem to point out that Tetanus, as induced from earth, by Nicolaier, and that, the result of wounds, is different.

It has also been remarked that inoculations made with material obtained from wounds to which antiseptic agents had been applied (carbolic acid, or Lister's corrosive sublimate gauze) gave no results, which fact, as the author remarks, points out the great importance of antiseptic dressings. It appears that the infection is entirely local, as no results were obtained from inoculations from the blood or spinal cord of the man, or the animals that died, which fact has already been noticed by Bonome. This varies from the results of Rosenbach, who found the characteristic bacillus in the spinal cord in four out of a hundred cases.

The conclusions Giordano arrives at are, that although we have not yet been able to isolate the specific bacillus that causes the disease, still we have proved that Tetanus is due to a micro-organism, is infectious, local, inoculable, and transmissible from man to animals, and from one animal to another, both directly and after culture.

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## SOME OF THE RELATIONS OF VETERINARY TO SANITARY SCIENCE.\*

BY ARCHIBALD ROBINSON, F.R.C.V.S., GREENOCK.

MR. CHAIRMAN AND GENTLEMEN,—Your worthy President—with whom, before his removal to Paisley, I had many pleasant and interesting business associations—has long been anxious that I should address you upon a disease in the prevention of the spread of which he became greatly interested

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\* Read at the Thirteenth Annual Meeting of the Sanitary Association of Scotland, held at Falkirk, 14th October, 1887.



while we were associated in Greenock. That disease, gentlemen, is Tuberculosis. After much pressure I consented; but in turning the matter over in my mind, I thought that to read a paper entirely on that subject would, from being necessarily very technical, scarcely be of sufficient general interest to your members. I have, therefore, decided to make the subject of my remarks "*Some of the Relations of Veterinary to Sanitary Science.*"

While we of the veterinary profession have a sanitary science which may be regarded as peculiar to our profession—interesting only to our patients, our clients, and ourselves—we have also a sanitary science which interests, or ought greatly to interest, the public in general.

The communicability of certain diseases from animals to man has long been recognised, and it is in this direction that I would more particularly desire to draw your attention to some of the relations of veterinary to sanitary science. Some of the diseases communicated from the lower animals to man are not only loathsome, but exceedingly fatal. There is one disease, however, which, when transmitted, is not only extremely benign—viz., Vaccinia (or Cow-pox)—but also confers immunity from another terribly malignant disease, viz.—Variola or Small-pox. We are indebted—if not for the discovery of this fact, at least for its application—as you are no doubt all aware, to the immortal Jenner. The discovery, however, of the attenuation of the rabific virus—which, when inoculated, gives immunity from Hydrophobia without apparently inducing any symptoms of disease—quite eclipses, from a scientific point of view, the discovery of Jenner. For this we are indebted, not to a physician, but to the renowned French chemist, M. Pasteur; and it would seem, according to some authorities, that we are in some way indebted to the French for the Vaccinia discovery also.

It is stated that it was well known in the South of France that the girls attending cows and getting inoculated with the (picote) Cow-pox were proof against Small-pox, and that in 1798 this was communicated by a Frenchman, called M. Rabault, to an Englishman, Dr. Pew, a friend of Jenner.\* Be this as it may, the credit is due to Jenner of having utilised the knowledge, not only to the benefit of his countrymen, but to millions of others. Jenner also stated that attendants on horses suffering from Grease, or Sore-heels, by getting inoculated, suffered somewhat severely as the result, but were afterwards proof against either Small-pox or Vaccinia. Jenner was perfectly correct in his observation, but was unfortunate in the selection of the word "Grease," which is recognised as an inflammatory condition of the skin of the limbs, especially about the heels (with eruption and fœtid discharge), commencing generally in the sebaceous glands, and is known as "Eczema Impetiginodes," or called by some "Steatorrhœa or Erysipelatous Impetigo."

He mistook the eruption of the specific fever of Horse-pox, the eruption of which, although not generally confined to the heels, is easiest seen there and about the lips and nose, where the skin is delicate. This error in nomenclature of Jenner led to errors being perpetrated for over half a century all over Europe, for endeavours were made in different countries to inoculate the cow with the discharges of greasy-heeled horses. The Horse-pox of the horse, however, without doubt, if not the origin, is capable of producing Cow-pox, as was perfectly demonstrated by Loy, Jenner's contemporary and co-operator; but he unfortunately, while recognising it as a specific disease, still associated it with the names "Sore-heels" and "Grease."

As the result of this, discussion followed discussion, with but little advantage until 1862, when a prolonged controversy took place in the Académie des Sciences, in Paris, on the origin of Vaccinia in the horse. The discussion

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\* Since writing the above, I find that Jenner must have been acquainted with the protecting power of Vaccinia long prior to 1798.

at this time arose out of the report, by M. Bousquet, on the work of a commission instituted at Toulouse to study the question.

Although the commission was decided that the disease of the horse which transmitted on this occasion Cow-pox, when inoculated, to bovines, was not Grease, it was still maintained by many that it could be inoculated from Grease also. My old and much revered teacher, M. Saint Cyr, of the Lyons Veterinary School, strongly opposed this, as being entirely contrary to and incompatible with the laws of nature and with the established principles of medical philosophy.

The questions of interest in these discussions, however, were not confined to the origin of Vaccinia, but amongst many others, the most important was its relationship to Variola.

Whilst the academy and the medical and veterinary journals were engaged in arguments as to the identity or non-identity of Cow-pox and Small-pox, M. Chauveau, the celebrated pathologist, and teacher at that time in the Lyons Veterinary School, was, with the assistance of MM. Vennois and Meynet, busy at the far more serious and useful work of experimentally proving what others were vainly endeavouring to solve by argument upon almost entirely hypothetical basis.

In April of the year 1865, M. Chauveau issued his report to the Society of Medical Sciences of Lyons, in whose name the experiments had been carried out, under the title of "Vaccinia and Variola: New Experimental Study on the Question of the Identity of these two Diseases."

These experiments were carried out upon a vast number of animals of different species—viz., the ox, man, horse, ass, sheep, goat, dog, and pig. After some very interesting introductory remarks, Professor Chauveau divides his report into two chapters. The first he devotes to Vaccinia and the second to Variola.

The first chapter is divided into five articles. Article I. treats of the transmission of Vaccinia in the bovine species—primitive Vaccinia or Cow-pox. Article II., of the transmission of Vaccinia in bovines that have suffered from Foot-and-mouth disease, and of the relations that exist between that disease and Cow-pox, or primitive Vaccinia. Article III., of Vaccinia in the human species—comparison and relations with primitive Vaccinia. Article IV., of Vaccinia in the equine species—comparison and relations with Cow-pox and human Vaccinia. This article is divided into three paragraphs, which consider—

1. The inoculation of Cow-pox to the equine species; comparison of inoculated Horse-pox and Cow-pox.

2. Horse-pox produced by the inoculation of Cow-pox and re-inoculated to the bovine species.

3. Horse-pox, produced by the inoculation of Cow-pox, is inoculated to the human species. Transmissions, crossed in man, the horse, and ox, executed comparatively.

Article V. treats of the vaccination of the goat, dog, pig, and sheep.

The second chapter, devoted to Variola, is divided into three articles.

- I. Inoculation of animals of the bovine tribe, and considers what happens—

1. When human Variola is inoculated to animals of the ox tribe.

2. When Variola is introduced into animals already variolised.

3. When Variola is introduced into vaccinated animals.

4. When Vaccinia and Variola are simultaneously inoculated.

5. When the variolous virus is transmitted from ox to ox.

6. When man is inoculated with the variolous virus which has been passed through the organism of the ox.

7. When the same variolous virus is transmitted from man to man.



8. When it is again taken from man to the ox.

Article II. treats of human Variola inoculated to the equine species, and contains nine paragraphs, consisting of—

1. Experiments on the general and local effects produced by the inoculation of Variola in the equine species.

2. Experiments on the inoculation of Vaccinia in horses previously variolised.

3. Experiments on the inoculation of Variola in horses previously vaccinated.

4. Experiments on the transmission of Variola from horse to horse.

5. Experiments on the transmission of Variola from the horse to the ox.

6. Return to man of Variola from the horse.

7. Cultivation in man of variolous virus taken from the horse.

8. Return to the horse of equine variolous virus cultivated in man.

9. Transmission to the ox of equine variolous virus cultivated in man.

Article III. finishes the report with a discussion of the work of other authors.

Now, gentlemen, I do not mean to weary you with details of these interesting experiments, nor even with a review of the various articles ; but I merely enumerate them to give you an idea of the extraordinary magnitude of the work undertaken by Professor Chauveau, whose name you will doubtless admit is a certain and sufficient guarantee for scrupulous exactitude in its performance. To be brief, then, these experiments show beyond doubt that, while Variola bears, when inoculated to animals, the same relation to Vaccinia that Vaccinia, when inoculated to man, bears to Variola, they are not one and the same disease. That is to say, that Variola, when inoculated to animals, produces even a milder disease than Vaccinia in animals, while Vaccinia produces a milder disease in man than Variola. That Vaccinia is not infectious by atmospheric conveyance either in man or animals, while Variola in man is. That no amount of passage of Variola through animal will transfer it into Vaccinia, and that, no matter what attenuation of the virus may be effected by such passage, it is still Variola that is inoculated, and consequently, as his experiments prove, a disease capable of propagation by infection. Also that, while the diseases are distinct, they bear the strongest possible relationship to each other, for, while man resists Variola when vaccinated, animals *variolised* (if I may be allowed the expression) resist Vaccinia, and when vaccinated resist Variola for a period of time. Gentlemen, I would like to insist on this point, for there seems still to exist in the medical profession of this country a large number who believe that Vaccinia is simply attenuated human Variola. Chauveau's experiments, which do not appear to be as well known in this country as they merit, prove beyond doubt that such is not the case.

It may be well for me to mention—in case any doubt should be entertained as to the result of the experiments carried out under Article II. of the first chapter—that the experiments proved that no relationship exists between Foot-and-mouth Disease and Vaccinia, as had been alleged by M. Depaul and others.

The existence of the almost invariably benign disease, Cow-pox, is known to almost every one in this country ; but the existence of Horse-pox does not seem to be so well known. During my comparatively short career (about fifteen years), however, a number of cases have occurred in my practice, and indeed within the last month two have come under my care. By far the most interesting occurred about ten years ago, when a horse belonging to the late Mr. Robert Warden, of Finnart, suffering from the well-marked general eruption of Horse-pox, was brought to our premises by the ploughman, who, on being informed that the horse was suffering from Horse-pox,

seemed rather sceptical. On being warned that if he got inoculated he might also suffer from Horse-pox, he was still more sceptical, and seemed to look upon the Horse-pox as being quite a joke. It happened, however, that he did get inoculated, and as he is now with Mr. Orr, of Craigieknowes, in Greenock, he has just refreshed my memory on the subject. He says his name is Charles M'Carrie, and, to use his own expression, ten years ago he was thirty-five years of age, and had been healthy since childhood, when he was vaccinated. While attending a cart horse, between five and six years old, of Mr. Warden, he got inoculated by a wound on his hand and suffered a certain amount of malaise (in his own language, "was kin' o' hingin'") for three or four days, when a large pock commenced to make its appearance. The left arm got corded, and a swelling commenced under his armpit, which acquired the size of a pigeon's egg. About the same time he noticed a papule of similar dimensions on the same part of his right arm, and several came out on his back and some smaller ones on his breast and body, as well as one on the point of his nose. For two days he was very sick and feverish.

The eruption passed through the usual stages and desquamated in the usual way, except the one pustule on his left arm, as large as a sixpence, which got accidentally knocked off, discharged a quantity of citrine coloured fluid, and was long of healing. The cicatrices are perfectly visible, and will doubtless remain so as long as he lives.

Although, as shown by Chauveau's experiments, Horse-pox and Cow-pox are identical diseases, the inoculation of the virus of the spontaneous or naturally-developed disease to the human subject, seems to be much more severe than when the disease has been inoculated to the horse from the cow and then transferred from the horse to man. This has also been recorded by Professor Bouley, who witnessed a student suffer pretty severely, as the result of inoculation from a horse affected with spontaneous Horse-pox, which had been the subject of a surgical operation, and in dressing the wound the student got inoculated.

It is very probable that the inoculation of spontaneously-developed Horse-pox virus\* would prove the most effectual preventative of human Variola, but there is the risk of, at the same time, inoculating Glanders, which is a most loathsome and fatal disease to the human species. It has, however, been shown that the ox is the animal whose system is most capable of regenerating human vaccine, which loses much of its potency by passing through repeated generations of mankind. This, in the light of recent scientific investigations, is one of the strongest arguments against the identity of Vaccinia and Variola. For it has been shown that the passage of certain viruses through the system of certain animals increases the power of these viruses, while the passage through certain other animals diminishes their power. Consequently, were Variola and Vaccinia one and the same disease, the virus of both would be increased by passage through the ox, while, in reality, that of Vaccinia is increased and that of Variola is diminished by passage through the organism of the ox.

Now, gentlemen, there is at the present time a considerable cry against compulsory vaccination, and while my sympathies certainly do not run in favour of those who denounce the State for the enactment of laws which have undoubtedly been of immense benefit to humanity, and of which the repeal would indeed be a grave misfortune, still, it seems to me, that when the State does enact laws of this nature, it ought to see that their enforcement be carried out with the smallest possible risk to those on whom they

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\* By spontaneous Horse-pox is meant Horse-pox the result of natural contagion, not developed experimentally.



operate. Instead of some medical men lending themselves to this popular cry against vaccination, it would be well for them to turn their attention to the manner in which vaccination could be carried out absolutely without risk of infecting the vaccinated with other diseases. That those who raise their voices against vaccination, as at present carried out, are justified by so doing, there can be no argument to dispute, and, it appears to me, that while all thinking persons acquainted with the subject must be its strongest partisans, under proper sanitary conditions, they cannot but protest, in the most pronounced terms, against a system attended by innumerable dangers that could easily be avoided. If the State requires that my child should be vaccinated, which it has a perfect right, not only as a protection to itself, but to others, on the other hand, an equal right appertains to me to demand that the State employ only such lymph as can be proved to contain no other germs than those of *Vaccinia*. In the present condition of things, Tuberculosis from either man or the ox, Syphilis from man, and probably a thousand ills we know not of, may accompany the lymph employed. The remedy for this can, to my mind, only be suggested by some such method as the following:—

1. Establishment by the State of emporiums for the *manufacture* and sale of the lymph.
2. That only bovine lymph be used.
3. That the bovines employed do not exceed two years of age.
4. That each yield of lymph be numbered with the same number as the animal from which it is obtained.
5. That such lymph be not issued until such time as the animal from which it has been drawn is slaughtered and a careful *post-mortem* examination made.
6. That such examination be made by a properly qualified and specially appointed veterinary pathologist.
7. That, in the event of *any disease* being present, the lymph corresponding to the number of such animal be destroyed.

By such a method there could be no risk of communicating any other disease than the one desired—viz., *Vaccinia*, and the expense would not necessarily be great, as the *Vaccinia* to which the animals had been subjected would not deteriorate the flesh, which could afterwards be sold for food.

The assertion that Tuberculosis or Consumption may be communicated with vaccine lymph is not a mere supposition, for its possibility has been experimentally demonstrated by M. Toussaint, professor in the Veterinary School of Toulouse. He inoculated two-year-old heifers with tubercle virus on 15th October, 1881, whose *post-mortem* on 10th February, 1882, revealed general Tuberculosis. After their inoculation with tubercle virus they were inoculated with Horse-pox virus, and the serum from the pustules produced, on being inoculated to twelve rabbits, gave rise, in six of them, to Tuberculosis.

Unfortunately, gentlemen, this is only one of the many ways in which this terrible malady, Consumption, may be produced. It has been experimentally and accidentally communicated over and over again, from man to animals and from animals of one species to another. Experimentally, it has most frequently been induced by inoculation or by the ingestion of portions of organs containing lesions of the disease. Accidentally, numerous cases have been recorded of dogs, cats, and fowls becoming consumptive from licking or picking up the expectorations of consumptive persons. It is also highly probable that many cases of infection occur in man and animals from inhalation of the bacillus when desiccation of the expectorations take place and the particles get suspended and float like dust in the atmosphere of sick rooms or byres. Sexual intercourse, and the use of spoons, glasses, or other vessels

from which consumptive persons have been feeding, may be considered other probable modes of accidental contamination, but that which interests us most and is, perhaps, almost as prolific a source of conveyance as any is the use, as food, of the flesh and milk of tuberculosed animals. As has been stated, the proof of transmission from man to animals of Tuberculosis is abundant, and, to most minds, the conclusion would be that the converse was equally practicable, but there are many who seem adverse to admit anything which is left to hypothesis, no matter how conclusive, and in view of the value of human life and the incurable nature of the disease, an experiment on the human subject could be looked on as little short of wilful murder. The admitted fact that man is a favourite subject of this disease, which can be transmitted from him to the lower animals, is to my mind sufficient to show that the disease is equally easily induced in him by transmission from the lower animals. There are, however, some cases recorded of accidental transmission of the disease in which the contamination has been so palpably traced from animals to man that the conclusion that the disease is so transmitted is irrefutable.

Dr. de Lamallerée gives the following interesting observation in the *Gazette Medicale* of the 15th August, 1886:—

“The hamlet of C. contains about ten habitations, which, from a hygienic point of view, are all that could be desired. Situated about 1,500 feet above the level of the sea, on the southern slope of a cultivated hill in the middle of a large forest, the ground is good and the air pure and invigorating.

“The little population consists of farm labourers and foresters, of natures robust and healthy like the air which they respire.

“The diseases of cities are unknown in C. In the memory of man death has only occurred from old age, Pneumonia, or accident. In 1872, a young man, M., returning from captivity in Prussia, after our disastrous campaign, comes and settles at C. as a labouring forester. At that time he suffered from Bronchitis, which he had contracted during the war, and of which he had not been able to recover. He married a young and vigorous girl of the neighbourhood, twenty-five years of age. Nine months after marriage she had a son. A short time after marriage M. had a first attack of Hæmoptysis, followed by several others at short intervals. Briefly, he died phthisical two months after his son was born. M.’s wife had assiduously attended her husband, never leaving, so to say, their only apartment, not too well ventilated either, which formed their common dwelling. Some time after weaning her child she had as the result of a chill, she said, an attack of Bronchitis, which became chronic, and little by little the signs became apparent of pulmonary Tuberculosis with the usual train of symptoms. The child was difficult to rear, and has attack after attack of Bronchitis; actually he is the perfect specimen of a child suffering from hereditary Tuberculosis.

“For the last two years the mother has cavities in her lungs, which enlarge slowly and provoke in her the abundant expectoration of the phthisical. There is every evidence of a rapidly approaching fatal termination.

“Quite recently I was called to another house in the same hamlet to attend a young woman living at some distance from the woman M., and I must admit that I was much surprised to find in this woman symptoms of the first stage of Pulmonary Phthisis. I had previously known her to be possessed of a robust constitution, twenty-nine years of age, and free from any diathesis. Consequently, I sought minutely for the cause that could have determined the appearance of tubercle in this woman, who had very seldom visited the woman M., and had never either ate or slept in her house. Here there was evidently contagion which must even have come from the neighbouring centre, but by what route? After many and fruitless inquiries, I at last



learned that the woman B. had eaten eleven fowls which had died at the woman M.'s, in the space of three months; and that, still more feeling her strength diminishing, she had cooked them very slightly, believing that she would derive more nourishment from eating the bleeding flesh.

"I had recently been reading the observation concerning the young man at the Alfort Veterinary School, who, being himself phthisical, had contaminated by his spittles the poultry yard of that school; as well as the observation published by M. Vallin in the *Revue d'Hygiene*, also treating of the contagion of human Phthisis to fowls. Had I not before me a further confirmation of the fact, contrary to the opinion of M. H. Martin? Under the influence of that idea I hastened to the house of the woman M., to satisfy myself as to the mode of death of these fowls, and learn whether they swallowed her expectorations. On this last point I was thoroughly satisfied, and without trouble; for in approaching the house I heard her cough, and at this signal a whole troop of fowls hurried to the open door, absolutely as they do in our country at the voice of the woman who carries them their repasts. These fowls were pressing round the edge of the bed of the invalid and quarrelling over the sputum.

"One of them had died that morning. I caused her to give it me, and immediately proceeded to make a *post-mortem* examination. The intestine was the seat of seventeen softened tubercles, disseminated through its whole length, and the liver was farcied with them. This unfortunate fowl was emaciated to the last degree, and for several days had scarcely been able to walk. The purulent matter in the tubercles of the liver contained a great number of tubercle bacilli. This fowl, then, being tuberculous, I considered myself justified in concluding that the fowls which had previously perished after exhibiting the same symptoms were equally so. Therefore these fowls must have been the vehicle of contamination, by the bacillus Tuberculosis, to the woman B., who ate them. From the moment that it is admitted that contagion may result from simply eating out of a plate or drinking from a glass which is being used by a phthisical subject, there is every reason to admit the possibility of inoculation by eating an aliment which is charged with the bacilli. That aliment, being only half cooked, could not have been deprived of the microbes which it contained; it had conserved all its potency, and played the part here of the inert envelope of certain pharmaceutical preparations which invest an active principle, and mask its flavour only to permit the more easily of its ingestion. The bacillus, once in the economy, is, according to the admitted doctrine, taken up by the circulation, and, after having chosen a favourable territory, implants itself and there develops, producing those physiological and organic disorders which are peculiar to it. In the present instance its election of domicile is the lungs, the favourite territory of Tuberculosis in man. Four months have only been necessary for it to give rise to such disorders that its presence could with certainty be affirmed by clinical examination alone. In fact, the stethoscopic signs furnished by the woman B. could not leave the slightest doubt as to the tubercular nature of her chest disease.

"REFLECTIONS.—In this case is found the triple contagion of Tuberculosis—

"1. From man to man.

"2. From man to the animal.

"3. From the animal to man.

"Contagion from man to man is in science an accomplished fact. The contagion from man to animals has been admitted by many authors; others have pretended that certain animals were refractory to inoculation. Among other, M. H. Martin has pleaded in favour of its innocuousness to fowls.

"I have cited the above two cases, and now bring a new one to prove the greater aptitude of fowls to become tuberculous by means of contagion than

even dogs or cats, etc., as shown by numerous other observations. The contagion from animals to man is in reality sufficiently demonstrated. In the case which I have described the vehicle which transports the bacillus is different. In fact, until now contagion by means of cow's milk has been almost exclusively the question occupying attention.

"I admit that very few people in easy circumstances run the risk of tubercular contagion; but in our poor parts of the country, where the peasants—less delicate than the citizens, and perhaps more interested—wish to lose nothing, hygiene demands that great attention be given to fowls destined for food. And, moreover, a question meriting elucidation is, whether a fowl, at the onset of Tuberculosis, is not capable of affecting he who partakes of it; and, further, what heat in cooking is capable of destroying the bacillus.

"In any case I would recommend from to-day, as a simple hygienic measure, to carefully remove the liver, the digestive tube, and the lungs of fowls before cooking, and to absolutely reject suspected fowls.

"By these means a danger—sometimes imaginary, but unhappily in many cases real—would be avoided."

This, gentlemen, as nearly as possible *verbatim et literatim*, is the communication of Dr. de Lamallere.

(*To be continued.*)

### THE ANIMAL ALKALOIDS.

THE mysteries connected with the phenomena of health and disease have been elucidated with great rapidity of late. Little more than ten years ago Koch conclusively proved that there was an intimate relation between bacteria and epidemic and contagious diseases; but wherein that relation consisted was not so apparent. The mere presence of bacteria in the body did not seem necessarily to indicate a state of ill-health; on the contrary, it was even asserted that certain species were of essential service in the vital economy. Now we have got a step farther. The recent investigations of French and Italian *savants* seem to show that the direct cause of the diseases connected with bacteria is to be sought in the alkaloids which are the waste products of these organisms. It is said that if these alkaloidal products are allowed to accumulate in the system, either through inefficient elimination by the excretive organs or through disease of those organs, they cause ill-health, and in extreme cases death, in the same way as other poisons.

The word "alkaloid" is used in chemistry to denote a class of substances having alkaline properties—that is to say, having in some degree the qualities which alkalis, such as soda and ammonia, possess, of being soluble in water and combining with acids to form salts. The alkaloids are remarkable because of the powerful physiological effects which they are capable of producing upon the animal system when absorbed by it. Some of them, such as nicotine and curarine, are among the most powerful poisons known; others, such as quinine, are invaluable medicines. Their generic name, derived from the Arab "kali," denotes a plant connection—indeed, until recently it was thought that the vegetable kingdom was the only source whence these substances were derivable. Accordingly, though from time to time certain alkaloidal substances were detected in animal excrements and tissues, the importance of the discovery was negatived by the supposition that they got into the system during life through the consumption of vegetables or medicines. But the recent researches of Armand Gautier appear to show not only that alkaloids are formed in the animal system as the result of bacterial fermentation, but also that the vital cells of the animal are, quite independently of



such bacterial action, themselves capable of elaborating alkaloids. So henceforth it may be convenient to distinguish alkaloids into two classes—namely, *vegeto* and *animal*—and to subdivide the animal alkaloids as Gautier does, into those due to the action of bacteria on the albumenoid substance of the tissues (*ptomaines*) and those elaborated by the vital energy of the cells themselves (*leucomaines*). Let us try to make this latter division more clear.

The vital process has been aptly likened to a slow continuous burning. In the living body fresh fuel, as it were, must be frequently added in order to supply the place of the waste material which the burning process entails. To speak more correctly, there is going on in every living cell which helps to make up the animal body a constant transformation of energy. Now, this transformation cannot take place without certain modifications of the material substance of the cell. The prime mover here is oxygen, which by acting upon the cellular material burns it up; at the same time giving off carbonic acid, urea, and other substances, which, if not cast out of the system, would poison it, and ultimately destroy its vitality as a whole. Hence the necessity of the excretive functions having free scope. But Gautier asserts that oxygen is not the only cause of this transformation process. He affirms that nearly one-fifth part of the life of the larger animals is what Pasteur has termed *anaerobic*—that is to say, deriving its force-vitality from internal modifications brought about independently of the help of oxygen. As the result of this anaerobic life of the vital cells, we arrive at the aforesaid *leucomaines*. If this fact is kept in mind, the origin of the *ptomaines* will be more easily understood. Pasteur's researches, as well as those of other scientific inquirers, have shown that anaerobic life is a characteristic of the lower orders of bacterial ferments, and that oxygen is not essential to their existence. And just as the vital cells elaborate *leucomaines*, so these bacterial ferments, feeding on the albumenoid substance of the body and causing what is known as putrefaction, develop *ptomaines* as their waste products.

The history of the discovery of the animal alkaloids is a remarkable one. The first to recognise the connection between the presence of *ptomaines* in a dead body and the processes of putrefaction was the Italian toxicologist Selmi. While examining a body for medico-legal purposes, he detected in the tissues an alkaloid not corresponding to any previously known. This was soon after followed by a similar observation; and Selmi was led to the hypothesis that these alkaloids were the result of bacterial fermentation after death. Further inquiry confirmed him in this supposition; and in 1872 he published his belief that really organic substances, similar in constitution to the *vegeto* alkaloids already known, were invariably elaborated in dead animal matter during the processes of putrefaction. In France, at about the same time, Gautier was engaged in independent researches with similar results. He observed that albumenoid substances, if left to putrefy, strongly developed ammoniacal characteristics; and he ultimately succeeded in extracting alkaloidal substances in small quantities from the fibrine of the blood. Later still, Selmi extracted two new alkaloids from pure albumen which he had caused to undergo putrefaction free from atmospheric contact; this conclusive experiment he announced in 1877. Since that date one *ptomaine* after another has been discovered, each fresh observation making the cause of their origin more clear; until at last, in 1885, Gautier made the crowning announcement regarding the formation of *leucomaines* in the vital cells of the body. About the same time this diligent investigator made some experiments on the muscular juices of the higher animals, which resulted in the discovery of five new alkaloids.

No doubt there is still ample room for inquiry; but Gautier's explanation of the part which these alkaloids play in the animal economy impresses one

as being substantially correct and only needing future discoveries to confirm it. As to the connection of the ptomaines with bacterial fermentation there is strong proof; for when animal matter has been examined with a view to their extraction the quantity found has varied proportionately with the number of bacteria present. Again, as to the poisonous character of both ptomaines and leucomaines there is no doubt; for when injected into birds and other animals even an extremely minute dose has been sufficient to cause death. Moreover, the symptoms, which preceded death in these experiments were thoroughly characteristic of poisoning by putrid animal matter—namely, diarrhoea, intestinal inflammation, dilatation of the pupil, loss of muscular power, and convulsions.

Many physiological phenomena which have baffled explanation appear perfectly natural in the light of Gautier's description of the vital processes. Cases of poisoning symptoms induced by the consumption of certain kinds of food—such as mussels, whelks, sausages, and the like—are of frequent occurrence. Instances of death having ensued upon such symptoms are by no means rare; and yet the actual cause of death, the precise poison at work, has never been discovered or defined. Now we have some light on that point. Further, we can more readily understand how it is that a long fatiguing walk may induce, in one who has for some time previously had little exercise, symptoms similar to those of Typhoid Fever. So, too, we need not look for a specific microbe to account for the presence of Typhus Fever amongst an army in the field; sometimes it may be explained as the result of auto-infection, induced by over-accumulation of alkaloids in the system. Another remarkable thing about the discovery is that it points to a close similarity, if not identity, between the vital processes of the vegetable and animal kingdoms. Lastly, it is yet more apparent that we could not live if we had not also the seeds of decay in us; that the very act of living entails the destruction of the living substance; that verily in the midst of life we are in death.—*St. James's Gazette*.

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#### THE HYPODERMIC INJECTION OF EXTRACT OF MUSTARD.

AT a meeting of the *Société Centrale de Médecine Vétérinaire*, M. Cagny drew attention to the fact of the employment of mustard having assumed so much importance as a *revulsif* (counter irritant), that it must be of interest to endeavour to facilitate its use and render its effects sure and constant. Mustard powder, when fresh, and even when deprived of its oil, requires, in order to produce its effects, to be applied by an experienced hand. Sometimes its action is little apparent, and at other times it exceeds that which the practitioner expected. But these inconveniences disappear in employing, by hypodermic injection, Savary's liquid mustard. Its effect is sure and rapid, while its intensity is entirely in the hands of the veterinary surgeon, who may at will limit the œdema which he desires to obtain.

The results which M. Cagny had derived from the employment of Savary's liquid mustard he laid before the notice of the members; though he had some time ago drawn attention to the value of this article for the cure of umbilical hernia. With regard to the *modus faciendi*, he employs the extract hypodermically, by means of the ordinary Pravaz syringe, by first taking up a large fold of skin at the part where he desired the œdema to form, pulling it outwards so as to stretch or tear away the connective tissue beneath to the full extent of the space to be acted upon; then the needle of the syringe is pushed through, and the syringe emptied beneath the skin. A half-syringe full (equal to one to two grammes of the extract) is injected a short distance from the first, and these two injections are sufficient to produce an œdema about a



square decimetre in size. Three or four punctures are therefore necessary to involve the entire side of the chest.

The effect is soon visible, a matter of great importance when compared with the effect of ordinary mustard, which is slow to appear, and sometimes is not seen at all. But in the new method it is apparent almost immediately, ten minutes sufficing for its complete development. When compared with an ordinary sinapism, the effect of this is marked, as it gives as hot a swelling, but one which is less painful—the animal exhibiting scarcely any restlessness; in one instance only had Cagny witnessed uneasiness and a slight febrile condition. The œdema persists for a long time, and this is a valuable effect. In only one case out of thirty was there a small abscess, and here an entire syringe-ful had been injected on each side of the neck of a horse attacked with vertigo, the injections being repeated next day, the brief interval probably favouring the formation of abscess. Cicatrisation, however, was rapid, and the traces of the accident were insignificant. Otherwise, in all the instances there has been no sloughing of skin or destruction of hair. The fluid has been injected indifferently into every region of the body, though Cagny remarks that it is preferable to apply it only to those parts where the skin is thin and loosely adherent.

He sums up the advantages of this procedure as follows:—

1. The liquid is absolutely unalterable, and its effects certain.
2. Its effects are produced almost immediately.
3. Saving of time. The practitioner can carry a small quantity of the fluid in his wallet.
4. Saving in expense, the cost being trifling.
5. No apparatus is necessary.

Cagny had employed it in vertigo and ophthalmia (applied to sides of neck); on the sides and front of the chest for thoracic and heart diseases; on the abdomen for Typhoid Fever, Enteritis, Colic, etc.; for umbilical hernia, in which three punctures were made around the tumour, which caused a voluminous swelling that was slow to disappear. Two cases had been most successfully treated in this way. With very large herniæ the injections might be repeated in about twelve days.

## Reviews.

INOCULATION FOR RABIES AND HYDROPHOBIA. By Surgeon-General C. A. GORDON, M.D. (London: Baillière, Tindall, and Cox. 1887.)

Dr. Gordon has been at the trouble to collate and compare with each other, opinions and statements bearing on the chief points in Rabies, with regard to the nature, prevention, and cure of that disease, about which so much has been written. He does not add a single fact or interesting observation of his own, and we are at a loss to understand the motives which impelled him to undertake such a task, as he leaves us no wiser than he found us, and deduces nothing from the facts, statements, and opinions with which he fills his book of 127 pages. From sundry indications we might infer that he belongs to the anti-vivisection and anti-Pasteurian parties, and the weight of his material certainly inclines in favour of these folks. Much of the nonsense and silly talk which has obscured the truth regarding the disease, together with the maudlin

sentiment which keeps it prevalent in our midst, and also much that is curious in its literature, are to be found in the book.

THE HORSE IN SICKNESS, AND HOW TO TREAT HIM. By J. COCKRAM.  
(London: L. N. Gill. 1888.)

This sixpenny pamphlet is recommended by the author, who appears to have been a cab or horse proprietor and manager. He announces that "it is penned with no feeling of hostility to the veterinary profession; on the contrary, owners of a large number of horses will do well to contract with 'vet's' for their services." There are some sensible hints, and some which are not sensible. With regard to the latter, we may give one instance. Speaking of a medicinal laxative to be regularly administered in a hot or cold mash on resting days, he says: "The best for the purpose is equal parts, by weight, of powdered antimony, sulphur, nitre, and gentian." Of this a table-spoonful is to be given. He alludes to horses being "unroofed" when receiving a bolus, through holding the tongue without, at the same time, grasping the halter. But really the production is altogether too crude and elementary, as well as obscure and limited, to be of much use even to amateurs.

BENCH BOOK FOR TEST TUBE WORK IN CHEMISTRY. By H. T. LILLEY, M.A. (London: Hamilton, Adams, and Co.)

This appears to be a very handy little book, written by one of the teachers at the Portsmouth Grammar School, for the use of those who are beginning practical work in chemical analysis. It is really a brief guide to lie on the bench, and enable the student to dispense with the use of a larger and more complicated book, in studying reactions by means of the test-tube. From its arrangement, simplicity, convenient size, and cheapness (only one shilling), it can be recommended to veterinary students who are working up chemistry, practically, in the laboratory.

STABLE MANAGEMENT, AND A FEW OF THE DISEASES OF HORSES IN INDIA.  
By W. S. ADAMS, Army Veterinary Department. (Madras: Lawrence Aylum Press. 1887.)

THE EQUINE DISEASES OF INDIA. By R. W. BURKE, Army Veterinary Department. (Jubbulpore: Star Press. 1887.)

These two works are of value to veterinary surgeons in India, to those who are likely to go to that country, and, to some extent, to those at home. Mr. Adams' contribution contains good articles on such subjects as feeding and exercise, skin diseases, Colic, *Filaria papillosa*, valerian as a tonic, Paraplegia, Lymphangitis, and Spavin, and is evidence of the skill and assiduity with which he is applying himself to the study of his profession. The article on Spavin, illustrated as it is by some good drawings, particularly merits notice. In the *Equine Diseases of India*, Mr. Burke treats of Surra, Anthrax, Kamri, Chiber, and Barsatti in an intelligent and interesting manner. Only one of these maladies—Anthrax—may be said to merit the particular attention of European Veterinarians, but the others are nevertheless attractive to pathologists, while a knowledge of



all of them is most essential to our colleagues in India, who find in them most serious disorders, three of which are generally beyond remedial measures. Mr. Burke deals with them in an able manner, and his references to Continental medical and veterinary literature in elucidating their nature, show the pains he has taken to accomplish his task in a satisfactory fashion. Recognising the difficulties army veterinary officers have to encounter in India, and particularly those due to overwork and an unfavourable climate, they deserve great praise when they devote themselves to the investigation of disease in that country, and publish the results of their labours. Surely such sacrifice must in time bring recognition of the value of veterinary science from the Indian Government.

## Proceedings of Veterinary Medical Societies, &c.

### LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held at the Masons' Arms Hotel, Louth, on Tuesday, October 11th, the President, T. Greaves, Esq., Manchester, taking the chair. The minutes having been taken as read, the Secretary was instructed to insert the printed report in the minute-book.

Mr. Robinson, of Market Deeping, was proposed by Mr. MACKINDER as a new member, and being seconded by the Secretary (Mr. GOOCH), was carried.

Letters of apology were read from Professors Fleming and Walley, Messrs. Gibbons, Thurmaston; J. W. Gresswell, Peterboro'; M. N. Parker, Birmingham; T. Chambers, Dudley; Briggs, Bury; W. A. Taylor, Manchester; Wm. Woods, Wigan; H. Brooks, Long Sutton; Jas. Armstrong, Secretary to the Midland Association, Prof. J. McCall, Messrs. Hy. Brooks, Fulbeck; J. Roalfe Cox, London; W. Duguid, G. T. Brown, Hy. Howse, Prof. J. W. Axe, Sir Hy. Simpson, Messrs. H. Santy, W. A. Field, Jos. S. Carter, Bradford, etc., etc.

Those who had accepted the President's invitation to the meeting, and to dine with him, were Prof. Williams, Messrs. Faulkner, Manchester; Osborn, Fulbeck; Freer, Uppingham; Capt. Russell, Grantham; Messrs. Dickinson, Boston; Hartley, Lincoln; Hardy, Sleaford; Wyer, Donington; Axe, Doncaster; Mackinder, Peterboro'; Smith, Huntingdon; Spencer, Wragby; and Gooch, Stamford.

The PRESIDENT regretted they had not a larger attendance, as the subject for discussion was a very important one, and interested veterinary surgeons, and they could not have found a gentleman who had given the subject more attention. When he asked Prof. Williams to read a paper, he at once consented, and left it to them to choose the subject, and they had selected the one named. He had great pleasure in calling upon Prof. Williams, F.R.C.V.S., of the New Veterinary College, Edinburgh, to address them on "Diseases attendant on Parturition—the effects of retained and putrescent placental membranes, Metritis and septic Metritis."

Professor WILLIAMS said it was not his intention to deal with Parturient Apoplexy or ordinary Parturient Fever, but he intended to confine himself pretty much to what Mr. Greaves laid down for him, and he would first deal with the impervious *os uteri*, where there was no dilatation of the *os* at the time of parturition. He thought it occurred under three distinct conditions. There were three conditions which were associated with non-dilatation; when the labour pains came on there was some extent of dilatation, with an escape of fluid, but the *os* did not open as readily as it ought, and when the labour

pains were on, and there was a slight discharge of fluid, and one or two fingers could be carefully manipulated and inserted into the *os*. Perhaps labour pains came on when the animal had not gone its full time, and in these cases it was the duty of the practitioner to modify the labour pains and give time. He had known these cases go on for some days, and a calf born, the mother doing well enough, and in these cases labour pains might be modified by a large dose of opium or a subcutaneous injection of morphia or such like drug. He had never known this fail in these cases when the *os* was slightly open and there was a discharge. They found in other cases that the *os* was quite closed and there was no opening at all. There was no discharge of fluid, but by a careful examination of the uterus the contraction was ascertained to commence at the mouth of the uterus instead of at the horns. A careful examination of the fœtus manifested that it was going away from them, the labour commencing at the wrong end. The straining here might be very violent as the vagina and even the neck of the uterus would come into sight every time the animal strained. This tumultuous labour, as he had seen it in young animals at the first birth, and efforts at straining, might be overcome by a large dose of opium or chloroform, or a combination of the two, and they would have been applying pressure to the back, and so on. There were cases where the straining continued, notwithstanding this method of treatment, and it had been suggested, and he had once performed the operation of tracheotomy, where it was followed by the most admirable results in a mare. In woman chloroform could be administered, and a woman could give birth to a child, although tracheotomy were performed, but when an animal strained after tracheotomy there was no resistance. The glottis was open. In the case of chloroform there was no contraction of the glottis. The air escaped through the glottis in cases after chloroform, and in cases of tracheotomy it escaped through the tube. In cases where chloroform was not administered and where it would be thought to be dangerous to administer it, the operation of tracheotomy could be performed with very great advantage, as it at once modified this violent effort. A woman could give birth to a child, and in Edinburgh there was scarcely a woman who did so except under chloroform. A woman could expel the fœtus by the contraction of the uterus only. The abdominal muscles were not called into operation to such an extent as was necessary in the lower animals. By overcoming the action of the abdominal muscles by chloroform or tracheotomy they did away with the violent efforts of the mother. He had known this form of violent labour come on and the pains modified by opium, and the animal go on for another month, and then both do well. If the *os* was partly open by dressing it with extract of belladonna he had seen marked results follow. By dressing it two or three times in twenty-four hours there was a gradual relaxation and labour came on in a regular manner. Actual disease of the *os* was the third condition, and there they got a thickening of the mouth from a formation of fibrous tissue. This often arose from a cow having been hurt, and there was another form—a schirrous condition of the walls of the uterus. This disease often led to a fatal termination, and one thing they might carefully consider here to-day was whether they were justified in dividing the *os* in cases of this kind. In the old times, cases of non-dilatation were attended with very bad results. Scarcely a case ever recovered. There must be a careful examination of the condition. If there be actual thickening, an actual schirrous condition, preventing contractility of the mouth of the uterus, one must be aware of the appearance of the case before he proceeded to the operation. The *os* was sometimes divided in the woman, but it was said it was dangerous to proceed either upwards or downwards. If they divided the parts upwards they were apt to get into the rectum, though, if careful, not much harm would be done, but there was not so much danger in their cases. It was



done in the human being laterally, but if they did it, let them do it inferiorly. In their cases they might avoid injury, but there was very great danger if they performed the operation on the floor. There was great danger when the vagina was wounded on the floor. Fluids gained entrance and septicæmia might be set up. It must be done laterally if at all. He was strongly of opinion that instead of dividing the *os uteri*, they should resort to the Cæsarian operation. There was less danger in removing the foetal membranes than through the *os uteri*. An animal that had real disease of the *os* should not be bred from again. They should be very careful to advise their clients not to breed from such an animal again. He had seen Gonorrhœa amongst a shorthorn herd; the cows and bulls all had it. A bull had served a lot of cows, and given them Gonorrhœa, and after some ten or twelve weeks they recovered. Bull No. 2 was also "clapped," and all the cows in the place I examined by speculum, and could see ulcers in the vagina and at the neck of the uterus. He told them not to breed from them, but they did, and most of them had to be destroyed. They had to consider the retention of the membranes, and Mr. Greaves had asked why the placental membranes were retained, instead of being expelled immediately after the birth. The foetal membranes should be expelled in a natural manner shortly after birth, because some few days prior to the birth there was a degenerative change taking place between the foetal membranes and the maternal placenta. The entire surface of the foetal membranes and the digitations between the placenta undergo a degenerative process. This operation having taken place between the maternal surface on the one and the embryonic surface on the other, the juncture was broken down, and the uterus became loose and naturally expelled the foetus, and birth took place in a natural way. The reason was simply that the degenerative change had not taken place as to cotyledons in the cow, and the placental surface in the mare, simply because the process of degeneration had not gone sufficiently forward. In some cases the cotyledons presented a diseased appearance. Fluids decomposed much more rapidly than solids, and if there were a fluid arising from the diseased surface it would decompose the material much more rapidly than a solid would. What were the effects of the retention of the foetal membranes? His experience had been among very high-class Clydesdale mares, and he did not consider it dangerous to remove the foetal membranes. He could tell them it was most dangerous to leave the foetal membrane in the mare many hours. (Hear.) Within six hours he had seen decomposition take place, and the mare was far more liable to a septic condition than the cow. They had a septic condition in the course of a very few hours, great prostration of strength, great fever, pulse 130 to 140, and other conditions, and in the course of a short time symptoms of acute Laminitis. He considered this due to blood-poisoning by absorption into the circulation. Laminitis was one of the symptoms of blood-poisoning, and he had no hesitation in saying it was due to the absorption of septic matter into the circulation, causing inflammation of the feet. The professor described the conditions giving rise to this disease of the feet from septic absorption. He was of opinion they could not be too quick in removing the foetal membranes from the mare, but it must be done very gradually and at a period of active contraction. If they could then assist nature in expelling the membranes, they would do it much more easily. The uterus of the mare contracted very firmly on the membranes, but the operation could be assisted by a large dose of warm water with Condyl's Fluid. In the cow, some practitioners never removed the placenta, and they said they did well enough, but he held they should be removed by the fourth or fifth day. The uterus of the cow remained flaccid, and on introducing the hand there was a great cavity, which they could explore. He was certainly an advocate of removing the foetal membranes in the cow as well as the mare. There was no such danger in a

cow, but they would find an improved condition. The best method, after assisting nature to expel the membranes, was to explore and find if all had been removed. Sometimes there was only some fluid resembling a thick gruel covering the surface of the mucous membrane. He used Condyl's Fluid or carbolic acid for cleansing it well. He sometimes dissolved five grains of corrosive sublimate in a couple of quarts of water, and injected it into the uterus, and he had found this useful in cases where Laminitis had actually set in. As to Metritis there were cases of inflammation of the uterus in the cow independent of an injury inflicted during parturition. He happened to be at Mold, in Wales, and he had an opportunity of seeing many cows with acute Metritis actually going on the road immediately after the act of parturition, whether they had cleansed or not, being rapidly driven to the railway station. He remembered one case in which an animal became delirious, and finally got into a comatose state. After the act of parturition, the animal being rapidly driven, exhaustion set in, and this was quite sufficient to produce Metritis. When a cow was rapidly driven in this condition, everything was favourable to the reception of the septic germ, and it was the septic condition that brought the disease in this way. He thought it was also due to the rapid sucking of air. This sometimes destroyed life before any septic condition took place, and the animal died in the course of a few hours the second day or so after parturition. He recommended the administration of opium or some other anodyne in order to relieve pain, and after the cleansing process use the ordinary disinfectants. He had had a great deal of experience among sheep, and was considered a very fair sheep doctor, and had seen a good deal of septic Metritis in sheep. It commenced by inflammation of the uterus, generally through an accidental injury. In Scotland ewes lambed in sheds, and if the sheep died there it was skinned; and sheep would also be killed in these sheds and the skins put on the railings and allowed to dry. The sheep were surrounded by an atmosphere tainted with septic germs, and could it be wondered that sheep accidentally injured imbibed the poison and became a source of infection to others? It was true that when there was no inflammation the resisting power to infection was something remarkable. Injecting fetid matter into the healthy subject could not induce septicæmia, but a very small quantity into an inflamed spot was sufficient to induce septicæmia. Immediately the membrane was inflamed, it became more subject to the action of the septic germs, and septicæmia set in, with its evil results. One cause of the sheep, the ewe, having inflammation of the uterus was being subject to the germs, and the germs exhaled by the animal tended to spurious parturition, and the disease, which in the first case arose in non-contagious cases, now became a contagious one. If one ewe had the disease amongst a flock, there was no telling the end of it. Then shepherds would not touch a ewe unless he had carbolised his clothes, for if he touched another ewe, that ewe was certain to have the disease. In connection with this disease in ewes there was a form of septicæmia of lambs, and lambs became black, similar to Black-leg. It extended down the hind quarter, and one remarkable thing about it was that lambs did not take it after the fifth day. The morbid material was introduced through the umbilical cord, and when the cord dried, the morbid matter could not be introduced into the lung. He recommended the use of strong carbolic oil, as it had been attended with very remarkable results. They had other difficulties associated with parturition, such as fistula, eversion of the bladder and uterus. In cases of hæmorrhage he found ergot of rye had a very good effect. He did not think ergot of rye had a very good effect in the mare or cow. It certainly had an effect on the bitch, and affected the capillary blood-vessels, becoming a styptic in cases of hæmorrhage. He would recommend a frequent washing of the hands and a washing in



carbolic oil. They should bear downwards to the horns of the uterus, because if one small portion of the decomposing membrane be retained it would to a great extent contribute to the fatal termination of the case. He had known mares—healthy mares, running at grass—retain the foetal membranes and escape very serious consequences, but in the stable it would always prove fatal; the atmosphere of the stable was much more favourable to decomposition than that of the field, and it would set in more rapidly in the stable. He had known mares go five or six days after the foetal membranes had been removed and do perfectly well after. (Applause.)

The PRESIDENT said it had been a great treat to hear this paper, but whatever Professor Williams took in hand he brought to bear upon it a fund of robust common-sense that no other man could excel. In this he had acquitted himself of his charge in a wonderful manner, and they would all be thankful that he had come amongst them to discuss this subject.

Mr. FAULKNER said personally he felt amply repaid for having journeyed so far to listen to the comprehensive and lucid manner in which the professor had dealt with the subject. Those gentlemen veterinary surgeons practising in an agricultural district must have been specially interested. His experience in these particular forms of disease was somewhat limited, practising as he did mostly in town practice, but some of the cases mentioned had come under his notice. The first subject was the impervious *os*, and then the Professor went on to speak of the schirrous *os uteri*. They had two cases recently, one of which was in a fine animal in grand condition with about a third calf, and in great distress, making violent efforts to expel the foetus. This cow had eversion of the vagina and protrusion of the *os uteri*. They had it put into trusses, and with a bar across her back relieved these violent efforts at parturition. He administered a large dose of opium with a hypodermic injection of atropine and morphia. He left the people some large doses of opium, and spoke to them about the Cæsarian operation, and the incision of the *os uteri*, but to neither suggestion would they listen. Everything else was tried, but as it was perfectly clear the cow would die, as she was fresh, they decided to destroy her. He had the uterus for examination, and found that it was as much as he could do to cut it through with a strong scalpel. In another case he incised both sides of the *os uteri*, but the cow died, and on examination the *os* was in a similar condition of thickening. He found that these cows had been served by a bull suffering from Gonorrhea, and to that he attributed the cause. Professor Williams had spoken with regard to the retention of the placenta, and how it was the placenta and the membranes became detached. He thought there were special causes at work; or why was it the degenerative process did not go on unless there was? With regard to parturition in the mare, he agreed with Professor Williams that the sooner the placental membrane was got rid of the better. He remembered one case in which a mare cleansed well, but yet she developed septicæmia, and died, not living twenty-four hours. She did not develop Laminitis, but was boxed in an unsanitary place. In another case a mare was seized with acute rigors. She was said to have cleansed well, but only a portion of the placental membranes had been brought away. The other portion he removed, and the mare went on and did well. In several cases he had seen cows with the placental membrane rotten, and unhealthy action had been set up, but they had got all right; and in others the cows had cleansed all right, and even then septic poisoning had been set up. When it got to the fifth day in a cow, efforts ought to be made to remove them. In the case of rigors he administered diffusible stimulants with opium, and he noticed in the cow a suppressed sort of moan. He came to the conclusion that internal mischief was going on, and alternately with diffusible stimulants and opiates he administered chlorate of potash as a febrifuge.

He also generally gave *nux vomica*, and washed the uterus out with a long syringe, not forgetting the carbolic oil, one to twenty. He had used corrosive sublimate, but in one case he used it it had an astringent effect, and he blamed himself subsequently for doing so. As to Metritis and septic Metritis, it did not arise altogether from rapid driving, for a cow stood in a byre, she calved, and they got a case of Metritis. He had seen a case of pure Metritis without septic poisoning, and Metritis with septic poisoning. The clue to the development of the disease was the introduction of septic germs. As to uterine hæmorrhage, he used the recognised styptics.

Capt. RUSSELL said he had listened with very great pleasure to the remarks by Professor Williams, and they, as members of this Society, were extremely obliged to him for coming down to address them. He had taken up a subject of great importance, of which they had a number of cases in country practice. With regard to the impervious condition of the *os uteri*, and with reference to schirrosity, he would ask whether it were not easier to cut through the living tissue rather than the dead? [Prof. WILLIAMS: Yes.] He had been surprised to see the manner in which the operation was performed. He only made a lateral incision and an inferior incision, and he was happy to say, in the case to which he referred, that the cow did well. In one or two days she was all right. He had heard what Professor Williams said about the Cæsarian operation, and he was, he must say, rather alarmed at the enormous quantity of blood, with which the operator and his assistants were deluged. He had noticed in performing the operation two gallons of blood flow from a cow in five minutes. In cases of parturition he used chloral hydrate for stopping pain, and he preferred it to opium or any other agent. He quite agreed as to the immediate cleansing of the mare, and had known cases go wrong after leaving it in for twenty-four hours, and the only question upon which he did not quite agree was the condition of the uterus in the cow after parturition. He had frequently noticed the difficulty in introducing the hand into the uterus after five days or so, but he noticed Prof. Williams said it was in a flaccid condition. [Prof. WILLIAMS: Not in all cases.] He frequently used the perchloride solution at about two per cent. The disease which affected ewes a week or ten days before the lambing period came on, where they were seized with more or less paralysis, losing the use of their legs and other symptoms, what would be suggested as the best method of treatment?

Prof. WILLIAMS: I have no experience.

Capt. RUSSELL: We sometimes have twenty or thirty in a flock. They completely lose the use of their legs, and if they are not speedily got up they will die in twenty-four hours.

Mr. HARDY: I have known cases of forty or fifty in a flock.

Prof. WILLIAMS said there was some fatality in the time. Many sheep farmers in Scotland were of opinion that if they fed sheep during stormy weather, they would not flourish; they would rather lose their sheep than feed them during a storm. They allowed them to starve or live as they pleased, and the mortality was something enormous, and the symptoms something similar to what were described.

Capt. RUSSELL: It is due to the sheep having been fed on turnips through the winter, and not having had sufficient dry food.

Mr. HARDY said in his district he went into a field of twenty or thirty heifers, and if the first slipped her calf, nineteen out of twenty would follow that example. He had removed them directly they commenced, but there was exactly the same effect.

Mr. WYER said if a mare foaled, and there was nobody present, and the rectum was thrust out for nine or ten inches, what should be done? He always returned it as well as he could, and removed the foal, but in all the



cases he knew of, they had always proved fatal, although he had exercised every care.

A discussion arose thereon, but no certain remedy was suggested, and Mr. Wyer repeatedly asserted that there were too many fatal cases resulting.

Mr. MACKINDER said there was one question about performing tracheotomy in cases of severe pains and a schirrous *os uteri*. He once divided the *os* in the mare, and successfully; but the man would use the mare a second time. She fell in foal again, and this time it was absolutely impossible to cut through, and she died from the effects. He agreed that directly tracheotomy was used there were no more throes.

Mr. HARTLEY (Lincoln) said that last year he was called to a mare that had been labouring for two or three days. He examined and found a twist of the neck of the uterus. She thrust down her bowels and got her legs among them, and they had to kill her. He thought corrosive sublimate, one to a thousand, was the best for general use. He had a case of schirrous *os uteri* in a cow which had been labouring for four or five days, and he made two incisions, upwards and outwards, and used *oleum eucalypti*, and the patient made a good recovery. He had a case of rupture of the womb, but the cow died.

Mr. GOOCH said he had one case, and he was trying to manipulate the vagina when the mare rolled over, and he had a free passage into the uterus; and he was pleased to hear Professor Williams say he was in favour of the immediate removal of the placental membranes in the mare. When he first came to Stamford, he was called to a valuable racing mare, the property of a nobleman, that had just come from the Emperor of Germany. The mare had a rough sea voyage, and foaled within a fortnight of her arrival. He was called in, but when he went into the stable, she had been wandering all over the box, and the walls were simply smothered with pus. He took the foal away and the foetal membranes almost immediately, but the mare died within twenty-four hours. Another veterinary surgeon blamed him for taking away the membranes so soon, and the consequence was he lost the practice of his client.

Professor WILLIAMS: That veterinary surgeon knew nothing about it.

In reply, Professor WILLIAMS said, as to the inversion of the rectum, he should recommend removal by amputation. He replied to various arguments adduced, and said that there was nothing calculated to bring on death by inflammation sooner than administration of purgatives. He had read all about this twist in the uterus, and, so far as he was concerned, he could truly sympathise with those gentlemen who had these cases, for he had never a successful case, though he had seen some cases recorded which looked very well on paper. He thought in cases of this kind it was impossible to remove it, and he was speaking of his own experience when he said it was better at once to perform the operation before their patient became exhausted. (Applause.)

It was resolved that the next meeting should be at Grantham.

The PRESIDENT proposed a hearty vote of thanks to Professor Williams, speaking of his address in highly eulogistic terms. Mr. GOOCH seconded, and Professor WILLIAMS suitably acknowledged the compliment.

#### PATHOLOGICAL SOCIETY.

*Experimental Tuberculosis and Struma. Experimental Infarction of Liver.*

At the November meeting of the Pathological Society, Mr. F. Eve read a paper on an Experimental Inquiry on the Relation of Strumous Gland Disease to Tuberculosis. The author had inoculated rabbits and guinea-pigs from ten cases of strumous glands taken at hazard. No inoculations were performed in the peritoneum, anterior chamber of the eye, or subcutaneous tissue. All

the guinea-pigs became affected with visceral Tuberculosis, and in four cases the rabbits. In a rabbit, the only one inoculated subcutaneously, a chronic abscess containing tubercle bacilli developed; and a rabbit inoculated from another gland escaped altogether, but this gland had undergone fibrous transformation, and no bacilli could be detected in it. The results of these experiments differed markedly from those of Arloing, who found that while guinea-pigs developed visceral Tuberculosis after inoculation with strumous glands, rabbits remained free both when inoculated in the peritoneum and beneath the skin. Arloing, however, only used glands from one subject. He further found that, after Tuberculosis from strumous glands had passed through two guinea-pigs, it still did not produce visceral Tuberculosis in rabbits. Since the primitive virulence of the micro-organism was not restored by passing it through guinea-pigs (which take Tuberculosis readily), he concluded that if it is not yet proved that Struma and Tuberculosis are the work of a distinct virus, yet that of Struma is, perhaps, sufficiently removed from Tuberculosis to constitute a distinct variety. The author had repeated these last experiments, and found that rabbits inoculated with strumous gland disease passed once through a guinea-pig developed as acute a Tuberculosis as after inoculation with miliary tubercle similarly treated. Specimens were shown for comparison. He could observe no essential difference anatomically between the lesions produced in animals by strumous glands and true tubercle. Tubercle bacilli existed in glands in small numbers, and in abundance in the organs of animals inoculated with glands. After carefully searching two glands and many organs of animals which had been inoculated, he found no evidence that this form of tubercle was the "tuberculeuse zoogléique" of Malassez and Vignal. The clinically innocent cause of most cases of strumous glands was probably due to the soil in which the organism was implanted, the disease being localised in the glands; perhaps its virulence was slightly attenuated by influences brought to bear in them, but there was nothing to show that, *ab initio*, the virus was a specialised form. The author suggested that the substitution of the term "tuberculous gland disease," "Osteitis," etc., for strumous or scrofulous, would remove confusion and tend to a better appreciation of the nature of the disease.

Dr. C. TURNER asked whether the experiments showed that some strumous glands were not tubercular.

In reply Mr. EVE said that all the cases experimented with proved that the glands were tubercular.

Dr. WOOLDRIDGE showed specimens of Experimental Hæmorrhagic Infarction of the Liver. In human beings such infarctions were of very rare occurrence. The experimental process consisted in injecting a solution of a substance—complex proteid body derived from the thymus and testis—into the jugular vein; the whole vascular system thrombosed in a rabbit, but in a dog complete thrombosis of the portal vein only followed. The animal could also be kept alive for a long time. The liver was filled with hæmorrhagic infarctions if the animal was killed in a few days; but if the animal lived more than a week the clot could not be found. But important structural changes, such as thickening of the capsule and patches of cirrhosis were found. Sometimes a bleb of blood formed underneath the capsule of the liver. Fatty degeneration and infiltration with cirrhosis could be detected. The capillaries were enormously dilated. A peculiar affection of the gall-bladder, in which a thick layer of blood formed round it, was described. A colourless tenacious mucus also formed in it and extended into the common duct. This might be a mode of origin of jaundice. Cohnheim and Litten had failed to cause infarctions. In his own specimens there was no thrombosis in the hepatic arteries. The process was neither a simple, inert, nor infective one. The chemical changes in the blood induced a slow clotting.



He suggested that many chronic inflammations begin as diseases of the blood, and might not be characterised by progressive changes, but that, once started, their progress might be made by a series of catastrophes which might be arrested at any stage.

Dr. NORMAN MOORE thought that in cirrhosis due to biliary obstruction the idea last mentioned would not hold good. On examination of Dr. Wooldridge's specimen, he had failed to see one characteristic of infarct as ordinarily understood. At St. Bartholomew's Hospital there had never been seen a case of hæmorrhagic infarction of the liver. The embolus and the well-outlined boundary were wanting in the specimens shown, and their absence prevented the acceptance of Dr. Wooldridge's specimens as true infarctions.

Dr. COUPLAND did not agree with Dr. N. Moore, and thought that the specimens might justly be called hæmorrhagic infarctions. He hoped for great results from this research.

In reply, Dr. WOOLDRIDGE said that he did not know by what other name to call the result as seen in the specimens handed round.

#### MEDICAL SOCIETY OF LONDON.

##### *Cerebellar Ataxy in a Kitten.*

AT a recent meeting of this Society, Dr. HERRINGHAM showed a kitten, aged about four months, one of a litter of four, all of whom were affected with a peculiar paralysis. When equilibrium was maintained, the movements of each limb and of the head and neck were normal; but when attempts were made to walk or run, the body swayed over and the cat lost its balance and fell. The diagnosis was failure of development of the cerebellum, based upon a similar case described by Rumpf (*Archiv Psych.*, xvi., 435), and corroborated by *post-mortem* examination of one of the litter.

Dr. ANDREWS said that under the microscope he found the granular layer of the cerebellum almost absent, and the layer of cortical cells very poorly developed. The spinal cord was normal.

#### THE WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE eighth meeting of the above Association was held at the New London Hotel, Exeter, on September 22nd., T. Olver, Esq., the President, in the chair. There were also present :—Vice-president J. A. Collings; J. P. Heath, Exeter; C. Parsons, Launceston; H. W. Thomas, Plymouth; Professor Pemberthy, London; Messrs. T. Airey, Crediton; H. P. Chase, Tiverton; S. Burton, Torquay; W. H. Bloye, Plymouth; F. T. Harvey, St. Columb; A. H. Oliver, Devonport; R. E. L. Penhale, Hatherleigh; W. Roach, Exeter; J. H. Penhale, Bideford; A. J. Down, Sampford Peverell; W. Penhale, Holsworthy; and the Secretary.

Letters and telegrams, regretting inability to attend the meeting, were received from Messrs. S. Pallin, C. Hoadley, E. R. Smythe, and G. H. Elder.

Messrs. A. C. Stewart, of Cardiff; J. T. Vicary, Launceston; and A. H. Oliver, Plymouth, were unanimously elected members of the Association.

The PRESIDENT then called on Professor Pemberthy to read his paper on "Preventive Inoculation for Black Quarter in Cattle."

The paper was a statement of the result of some experiments relative to Black Quarter (Symptomatic Charbon), a fatal disease affecting cattle. This disease, he said, had been proved to be a communicable one from one animal to another. In some parts of England, the destruction from the disease was

7 to 10 per cent., and the natural loss was most considerable. It was due to a micro-organism, which was in character very much similar to that which produced Anthrax, a disease fatal to the human subject, as well as to the animal. The bacillus, which lived without oxygen, could be destroyed by no kind of fermentation. Experiments had been carried out relative to this disease by eminent French scientists, whose method was to inject the dried virus. The result, however, of his own experiments established, he thought, that it was much better to inject the virus in the liquid form. This he obtained from an animal which had died of Black Quarter. Before putrefaction set in, a portion of the muscular tissue was chopped away very finely, and squeezed through a jelly-bag or piece of coarse linen. The product of this was mixed with four or five times its quantity of water by weight, and when strained a clear fluid remained. This was the virus used in the inoculation, and from fifteen to twenty-five drops were injected into the jugular vein by an ordinary hypodermic syringe. Especial care had to be taken to prevent the virus coming into contact with the connective tissues, or the result would be very quickly fatal. With this precaution, however, the operation was extremely simple. He quoted cases in which the inoculation had conferred absolute immunity. There was an instance where he inoculated fifty-six animals near Manchester, in which he was unfortunate. Two of the fifty-six died, and that was owing to the bungling of the attendant, who was somewhat nervous while forcing up the vein, causing the virus to come into contact with the connective tissue. He disapproved of setoning. Many of the animals suffering from the disease upon which he experimented had been restored, and he did not believe that the insertion of setons had any protective effect against Black Quarter. His paper was not one of inferences, but of facts, and these bald facts he placed before them that they might draw their own inferences.

An interesting discussion followed the reading of the Professor's paper, in which nearly all those present took part. There appeared to be a general consentaneity of opinion that setoning did in some way afford a certain amount of protection against Black Quarter, although it was difficult to explain by what action. It was agreed that if we had more knowledge of the method and channels whereby the bacillus gained ingress to the bodies of its victims, we should be in a better position to adopt preventive measures. The disease appeared to be most rife during the autumnal rains of October and November. It was regarded as a fallacy to suppose that the best of the herd were those most usually affected, or that high feeding rendered an animal susceptible to the disease. The results obtained by the Professor were distinctly progressive, and so far satisfactory; and it was hoped he would continue with his experiments, so as to render the operation of protective inoculation simple, easy, and safe.

Mr. COLLINGS proposed, and Mr. J. H. PENHALE seconded, a most hearty vote of thanks to Professor Pemberthy for coming there among them and giving them so much interesting matter to think over.

On the proposal of Mr. HEATH, the Professor was unanimously elected an Honorary Associate of the Western Counties Veterinary Medical Association.

It was resolved to hold the next meeting at Exeter, in March.

A vote of thanks was accorded the President for his able and courteous conduct in the chair.

After the meeting the President entertained the members to an excellent dinner, after which the usual patriotic and professional toasts were indulged in and duly responded to, and a most enjoyable evening spent. So closed one of the most successful meetings which the Association has yet held.

W. PENHALE, *Hon. Sec.*



## GLASGOW VETERINARY COLLEGE.

THE winter session of this College commenced on Wednesday, 5th October, when a large attendance of members of the profession, students, and visitors, was present.

The introductory address was delivered by Principal McCall. After making a few cursory remarks on the alterations that had taken place in the teaching staff, and the changes which were proposed should be made in the curriculum, the Principal complimented the retiring Board of Examiners for the courtesy they had shown during their term of office, and then passed on to the consideration of the subject of his address, viz. :—

## PLEURO-PNEUMONIA IN CATTLE.

He said : This disease for the past thirty years has engaged a large share of my time and thought, and in all the introductory lectures I have had the honour of delivering here I have regularly referred to it, and the present, for various reasons, shall be no exception. As my remarks at this time are principally directed to students and laymen, I may say that when I entered the ranks of the profession, and for years after, few veterinarians in this country entertained the opinion that Pleuro-pneumonia was a contagious malady, and for that reason it was widespread. In 1859, when I commenced practice in this city, Pleuro was present, I might almost say, in every cowshed, and it was the same in Edinburgh and all large towns in the three kingdoms. It had spread also to the country districts, and in the lines of cattle traffic its victims could be told by hundreds. In the then celebrated Hundred Acre Hill, with its 900 dairy cows, Pleuro always existed, and so certain were the animals to take the disease, that new purchases were placed at once alongside affected animals. The pecuniary loss by this disease to stock proprietors was immense, the computed annual loss in this city alone being £4,556; but agriculture in many of its branches being prosperous, it was quietly tolerated, and looked upon as an inevitable consequence of keeping live stock—in fact, a loss that must be borne, and the less said about it the better. That undoubtedly was the view taken by agriculturists, and had it not been that the country was visited by a more rapid and deadly scourge than Pleuro-pneumonia, viz., Rinderpest (Russian Cattle Plague), it is highly probable that such is the view which would have been entertained until this day. In 1865 Cattle Plague was imported, and this malady spreading with lightning rapidity, and almost annihilating the cattle of some districts within a few days, it roused the country, and finally the Government, into action. No machinery was, or ever had been, in existence to deal with disease in the lower animals. All attempts hitherto to get the Government to interfere in the spread of cattle maladies had signally failed, and no doubt on this occasion would also have failed had it not been that the Government were confronted with a malady which, if left alone, would ere long exterminate the breed of cattle in the country. A Veterinary Department was created, recommendations were issued, and Local Authorities constituted. Medical treatment was recommended and adopted. Sanitariums were built, but steadily the disease moved on, and wherever it entered total extinction of the herd was the result. In this city, within a fortnight of the first appearance of the malady, many byres had been cleared of their whole occupants, and the dairymen, in not a few instances, left almost penniless. To save life, I need scarcely say, is the earnest desire of all who practise the profession of medicine, and many and varied were the medicines administered, and the measures adopted to wrest the poor dumb creatures from the grasp of death, but all to no purpose. The advice now tendered to the Government was to slaughter all herds the moment the first victim had fallen a prey to the affection, and to compensate the proprietor out of the Imperial funds. A perusal of the college scrap-book at this date is

interesting and sometimes amusing as regards the language used in expressing the writers' horror and contempt for the advice so given. The Government, finding all efforts fruitless in extinguishing the disease, finally issued an Order to slaughter and compensate, and from the day that Order was put in force the disease gradually ceased to spread, and in a very short time was stamped out. Complete success having attended the Government measures in ridding the country of Cattle Plague, pressure was now brought to bear on the Government to deal in a similar manner with Pleuro-pneumonia, and to which it reluctantly responded. The first step taken by the Government was to declare the movement of an animal affected with Pleuro punishable. The second was to make the place where the affected animal was found an infected place. The third was to make it compulsory to slaughter affected animals, to isolate and there detain the remainder of the herd so many days. By-and-bye came the Order of compensation, with slaughter, one-half the value of the animal being allowed, and the period of detention of suspected animals increased. It must be allowed that by these measures the number of outbreaks were curtailed, but the disease was far from being wiped out. An order was again passed increasing the compensation to two-thirds the value of the animal slaughtered, and increasing the days of detention of the remainder of the herd. Power has also lately been given to Local Authorities to slaughter whole herds and grant compensation, to regulate the movement of cattle within their jurisdiction, to close markets, and to declare a whole burgh or county an "infected area." In fact, it might be asked what is it that a Local Authority cannot do with the view of preventing the spread of Pleuro-pneumonia? And, notwithstanding the enormous amount of money spent in carrying out these measures, Pleuro-pneumonia is, I think, at the present time more prevalent than it has been for the last twelve years. To all appearance we are making but little progress in our endeavours to stamp out the disease. True, in some towns and districts the malady has almost been banished, but, I repeat, speaking of Scotland as a whole, the Orders in Council have failed in dealing with this disease. Now, are we driven to the conclusion that Pleuro-pneumonia is a disease which cannot be controlled by such remedial measures as the Government have placed in the hands of the authorities? Many persons say so, but I cannot concede that. The power which the Government have deputed to be exercised by the Local Authorities is ample, but it is misplaced, and always has been misplaced. It is exercised judiciously and with the best results by some Local Authorities; and it is exercised injudiciously, frequently oppressively, by other Local Authorities, and with questionable results; and by not a few it is all but a dead letter. The Government measures in the hands of the Local Authorities, and read by their results, have been a signal failure in so far as stamping out Pleuro is concerned. And what about their effects on trade? Speaking for this city, I am in a position to prove that the action of certain Local Authorities during the past eight months or so has diverted from this city dues connected with its cattle trades amounting to a sum not less than £5,000 sterling. And what about the pecuniary losses sustained by private traders? I could mention the names of many traders, graziers, and farmers who, by the action of the Local Authority of Lanarkshire in declaring their county to be infected, have been prevented this whole season from sending cattle to their grass fields. Many of the persons I have in remembrance, who leased grass fields for the season at high rents, and even paid the rent in advance, have been prevented from placing a hoof on them, and why? Because there were, or had been, a few outbreaks of Pleuro, probably six miles off this week, and the next week probably thirty-six miles. Regarding infected areas I am strongly of opinion that under no circumstances is it expedient or necessary to declare a whole county or burgh an infected area in dealing with Pleuro-pneumonia. Nay, I would say that it



must be under exceptional circumstances that the "infected area" requires to be extended even to the radius of one mile. Pleuro-pneumonia is only spread by cohabitation, and if the affected animals be immediately slaughtered (as the Act expressly stipulates), and the remainder of the herd kept within the walls of the "infected place," there is no more danger to be apprehended from animals passing the premises, if need be, than individuals passing round the outside of a fever hospital. If the suspected herd be at grass, rail off a space of a few hundred yards; do not permit the suspected herd and sound herds around the boundary to approach each other; and the cattle are as safe in their relative positions as if miles intervened. If I am correct in my belief—and I think I have had sufficient practical experience to settle this point—what nonsense, what injustice it is to stock proprietors to declare a whole county an "infected area"! In support of my opinion—an opinion I have held for at least twenty years—Pleuro-pneumonia is only spread by cohabitation, I shall read you the following letter, of date 2nd September, 1887, and addressed to me by Mr. Gadsden, Philadelphia:—

"Philadelphia, September 2nd, 1887.

"Professor James M'Call, F.R.C.V.S.

"My dear Sir,—About the commencement of the present year I wrote you of an experiment that was to be tried in Chicago, Illinois, of placing healthy cattle in the sheds of the Shufeldt Distillery, which had previously contained animals affected with 'contagious Pleuro-pneumonia.' I gave Mr. Shufeldt an opinion at the time that I considered this perfectly safe, and that contagion could only be conveyed by contact with the living diseased animal. He now writes me that the experiment has been successful; that the 900 steers placed in the sheds on the 18th of December, 1886, were slaughtered (fat) in June and July, 1887, under State veterinary supervision, all the lungs carefully examined, and not a taint of the disease found in any of them. It is true that these sheds were superficially disinfected, but the flooring was not removed, nor the refuse under the floors taken away. As to the virulence of the disease shortly before this test was made there can be no doubt, and the rapidity with which it spread among living animals my *post-mortem* (of steers in Chicago) showed that of some of the herds destroyed eighty per cent. of the whole number were affected. I am deeply interested in the extermination of this scourge in the United States, and I would very much like to have your opinion as to the reason that Pleuro-pneumonia prevails to such an alarming extent to-day in Great Britain, notwithstanding the stringent laws that you have, and the vigorous efforts made to eradicate it. I am firmly of the belief that the chronic and so-called recovered cases in the country have been the centres of contagion that have communicated the disease to the West, and caused the frequent outbreaks in localities where it had not heretofore existed; and I would like to know if you experience the same results in England and Scotland. The reports in the *Veterinarian* show that the disease prevails to a greater extent in Scotland than in other parts of the kingdom; and knowing that inoculation has been extensively tried in that country, I would like to have your opinion as to its value in preventing the spread of this disease, or whether it has not rather tended to keep it alive and introduce it where it did not exist.—Trusting you will pardon me for again troubling you on this important subject (to us), I have the honour to be yours, very respectfully,

(Signed)

"J. W. GADSDEN."

In dealing with such a disease as "Foot-and-mouth," it may be a wise step to declare a whole county, or even a kingdom, an "infected area," but as regards Pleuro-pneumonia it never can be so, and no Local Authority should be permitted to exercise such a power. But to return, the Government measures exercised by the Local Authorities have not only failed in

stamping out Pleuro-pneumonia, but in even keeping the malady in check, and the all-important question arises what should now be done? Two methods may be pursued. The first, and probably the best, devolves the whole or greater part of the duties on the Privy Council, and abolishes or curtails the power of Local Authorities. The second desires the Privy Council to appoint a central board to control and regulate the action of the various Local Authorities, and make the slaughter of whole herds, with compensation, compulsory on every Local Authority wherever the disease makes its appearance. By adopting either of these methods and energetically following up outbreaks as they occur, Pleuro-pneumonia, like Rinderpest, would be banished from these shores, and the vexatious restrictions under which the live cattle trade is, and has for years been, conducted, done away with. As I have stated elsewhere, inoculation is a valuable and yet a dangerous remedial measure to apply to this disease, or to allow individuals to exercise it as they may feel inclined. I am surprised at the ignorance and prejudice displayed by many persons—professional and non-professional—regarding the effects of inoculation. We have, on the one hand, a large body of professional and non-professional men who have no faith in inoculation, and do not believe that the lymph of the lung has a specific action when inoculated, and we have, on the other hand, a considerable body of professional and non-professional men who have implicit faith in inoculation under all circumstances. Now, both parties are in error. The first in misbelieving or believing too little, and the second in believing too much. Judging from my own experience, I feel warranted in making the following statements:—1. That a sound animal inoculated with fresh lymph taken from the lung of a Pleuro animal is thereby rendered proof to an attack of Pleuro-pneumonia by cohabitation. 2. That a diseased animal, *i.e.*, an animal labouring under an attack of Pleuro-pneumonia, may, notwithstanding, be successfully inoculated. 3. That the success or non-success of the operation is no proof of the animal being free from or labouring under Pleuro-pneumonia at the time or prior to the time of operation, but a proof of the vitality or non-vitality of the virus used. 4. That a successfully-inoculated animal having sound lungs at the time of inoculation gives off no contagion, and never transmits the disease to other cattle. 5. That a successfully-inoculated animal having diseased lungs at the time of inoculation gives off contagion and transmits the disease to other cattle. 6. That a successfully-inoculated animal having an encysted portion of lung at the time of inoculation gives off no contagion, but when the cyst wall breaks or becomes dissolved it will then give off contagion and spread the disease to other cattle. 7. That no professional man can with certainty affirm that the lungs of an ox are free of encystment, because the cyst may be buried deep in the lung and covered by healthy lung tissue. If the opinions expressed be correct it is self-evident that a herd of cattle inoculated after one or more of their number have succumbed to Pleuro-pneumonia can never with safety be allowed to mix with sound stock. True, they could with safety if none of them at the time of inoculation had contracted the disease by cohabitation or, as we term it, the natural method, but it being a slowly incubative affection, it is scarcely possible for one or two animals to fall victims to Pleuro and the remainder to be sound at the time their neighbours died. I would not accept of an inoculated animal out of a herd where inoculation had been had recourse to after one of the herd had died of Pleuro-pneumonia. But if inoculation had been practised on a perfectly sound stock I would not hesitate to receive the inoculated animals among my own, and, indeed, I have them at the present time under these circumstances, and have had them for the past nine months, and with no ulterior consequences. Cattle inoculated in a stock after Pleuro has made its appearance should be kept by themselves, and, as soon as they are in condition for the butcher,



slaughtered. In Edinburgh, as is well known, inoculation is frequently practised after Pleuro has manifested itself in a dairy, and undoubtedly many lives thereby been prolonged. In due course these inoculated cows, when fit for the butcher, are conveyed to the auction mart or market and there sold. To their destination they proceed, and on their journey spread the infection to healthy stock with which they are allowed to cohabit. The county of Lanark has had a painful and most expensive experience of the truth of what I have said, and I am in the position to prove that without almost an exception the numerous outbreaks of Pleuro which have taken place in that county during the past nine months have been traceable to diseased and inoculated fat dairy cows hailing from the city of Edinburgh, and sold at certain auction sales in the county. In Glasgow, as is well known, the Local Authority deal very rapidly with outbreaks of Pleuro-pneumonia by slaughter and not by inoculation, and the annual loss has been cut down from £4,556 to under £450; and while the disease in the county of Lanark has probably never been as widespread, in Glasgow we have only had three outbreaks during the past twelve months. We are anxious that these facts should be known, as Glasgow is a great receptacle of cattle from all parts of Scotland, Ireland, Canada, and the United States; and I can with confidence assert that the system of inspection adopted and the vigilance exercised by the Local Authority of Glasgow is so complete that cases of Pleuro-pneumonia do not escape detection. In Ireland Pleuro-pneumonia has still a footing, but at present its ravages are confined to the counties of Dublin, Meath, Kildare, Louth, and Wicklow. If a cordon were drawn round these counties, say for six months, and bold and energetic measures had recourse to for the extermination of the malady I do believe it would be stamped out. Being a breeding country, and not requiring to import stock, there is no valid reason for the continuance of the malady except the supineness of the Local Authorities. The stock proprietors of Ireland ought to rise in a body and insist upon these counties being closed and kept closed until Pleuro-pneumonia has been extinguished. The enhanced value of Irish stock shipped to England and Scotland, and the impetus that would be given to trade by the removal of all restrictions, would in a short space of time compensate all parties for present loss and inconvenience. Then what an honour it would be to the Irish nation to demonstrate to the world that Pleuro-pneumonia like Rinderpest is not indigenous to their country, and can be "stamped out."

The CHAIRMAN (Dr. McVAIL) said:—

GENTLEMEN,—The duty that falls to me now is a very pleasing one—that of asking you to thank the Principal for the very admirable address which he has just given us. The importance of the conclusions to which the Principal has come in connection with Pleuro, particularly with regard to inoculation and its protective power in that disease, are of very far-reaching consequence. These conclusions not only affect that disease, and so affect to a large extent the food of the people, but unquestionably they throw light on the whole subject of the contagious diseases not only of the lower animals, but of the human race itself. And, as belonging to the profession of medicine which has to do with treating humanity, I should like very much to see in connection with the great Fevers, the influence of such inoculation experiments as Professor McCall has arrived at, fully applied. It really seems as if the profession of human medicine, in so far as infectious diseases are concerned, were going to lean in the future considerably on the results arrived at by veterinarians. The two professions have been becoming more closely linked in recent years, and I should like to see much more intercourse between the two sections. It is in one sense to veterinary medicine, the profession of human medicine owes by far its most important result, viz., vaccination. For the initial steps of that great discovery by Jenner were owing—not to his

knowledge of ordinary medicine, but to his knowledge carefully, laboriously, very thoroughly acquired of the eruptive diseases of cattle.

Now, if any physician were asked which group of all the diseases that affect humanity he found most difficult to treat, he would unquestionably say the tubercular group of diseases. In this group there can be no doubt we will get help from your section of the profession, for recent observations have shown that the tubercular diseases of cattle are inoculable—that tubercular animals slaughtered and eaten by other animals may cause in these Tuberculosis to be developed. Now, if that be so, the question comes, Does the consumption of such food by man give rise in the human race to Tuberculosis? Does it give rise to Tuberculosis in individuals predisposed by weakness or some peculiarity of certain organs to the reception of the tubercle bacillus? That is a question of immense importance, and the solution of that question is quite as much in your hands as in the hands of physicians. Further, does the milk of tubercular animals communicate Tuberculosis? The answer to that has been in the affirmative. Not only so, but it seems to communicate Tuberculosis if the milk gland of the affected animals be free from any actual tubercular disease. That has been demonstrated by recent experiment. Really, we must have closer communication in the scientific work of the two professions. Then, again, there is that other most important discovery made last year by Mr. Power, regarding an outbreak of Scarlet Fever that was traced to cows at Hendon. There are also the observations of Professor Klein in connection with a similar case at Wimbledon, in which it was shown that the poison which gave rise to Scarlet Fever in the human subject was produced in the cow, the disease, while in the cow itself, being of a comparatively light and non-fatal nature. The question then comes, Is it within the cow the poison is developed? and we must look to your profession again for help. Therefore, there is ample work for those gentlemen who have got these medals to-day. In my own profession there has been an almost entire change since the days of Bob Sawyer, and your side of the profession has relatively been advancing with more rapidity in the way of improving scientific measures. There can be no doubt at all that the next twenty years will see a great change in our ideas of infective disease; but unless we have help from veterinary medicine, it is quite impossible to solve such questions as I have indicated. Gentlemen like those who have got these medals, should work up the whole subject of Bacteriology, and you have much more opportunity of tracing to their final issues these minute organisms in the animal, than we have in the human subject. *Post-mortem* examinations are beset with great difficulties in the human subject—not so with yours; and for the other section of medicine that has to do with humanity, you can do a great deal for them that they themselves cannot do.

In this College I know you will get every advantage of working up to the highest stage of your profession. Professor McCall has referred very modestly to the methods of dealing with the infectious diseases in Glasgow, but Professor McCall might have said that the methods were largely of his own planning.

With such professors as you have, and ample laboratory accommodation; with Professor Limont, who will do everything he can to aid you in such studies as I have mentioned, you should use your advantageous circumstances to the very utmost, for when you leave such a school as the present, and go into practice, you will find it very difficult to acquire the methods of scientific research. Acquire such knowledge now, and I have no doubt the students of this session will add fresh lustre to the College.

I have much pleasure in proposing a vote of thanks to Professor McCall.



# LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on Sept. 2nd, 1887.

*Present.*—Prof. Williams, Prof. Lewis, Edinburgh; Messrs. T. Greaves, Peter Taylor, W. A. Taylor, S. Locke, J. B. Wolstenholme, T. Hopkins, J. Ingram, F. D. Garside, W. Dacre, A. J. Jones, H. D. Chorlton, T. Horrocks, Manchester; Jos. Abson, Sheffield; A. Munro, Altrincham; H. Ferguson, Warrington; J. G. Mayor, Kirkham; E. Kitchin, and the Secretary, Liverpool; A. M. Michaelis, Stockport; G. Ellison, Chorley; R. H. McRaith, Lancaster; Jos. Faulkner, Rochdale; W. H. Bridge, Bolton; F. Carter (student), W. Hall, Royton.

In the absence of the President, Mr. Thos. Briggs, who had unfortunately met with an accident, the vice-president, Mr. J. B. Wolstenholme, was voted to the chair.

Apologies for non-attendance were received from Professor Walley, Hy. Thompson, J. E. Eltoft, J. S. Hurndall, J. Marshall, T. Leather, W. W. Smart, W. F. Greenhalgh, J. H. Carter, and the President, Mr. Thos. Briggs.

Mr. S. LOCKE proposed, seconded by Mr. W. A. TAYLOR, that Mr. R. H. McRaith, M.R.C.V.S., of Lancaster, be elected a member of the Association. Carried unanimously.

Prof. WILLIAMS then introduced, by a short lecture, the subject of Therapeutics. He reviewed and dwelt at some length on the practice of exhibiting physic in cases of injuries to the foot (Punctures, etc.), Pneumonia, and in cases of intestinal obstruction accompanied by inflammatory symptoms, etc. He held that the giving of a rational dose of physic in the first class of cases was beneficial, but condemned it in Pneumonia and in cases of intestinal obstruction alluded to. He spoke very favourably of his experience with cocaine and of strophanthus, the new cardiac tonic, the latter being superior to digitalis.

The result a very valuable and interesting discussion, taken up by the majority of those present, including Messrs. Thos. Greaves, P. Taylor, W. A. Taylor, W. Dacre, S. Hopkins, Prof. Lewis, J. G. Mayor, S. Locke, and the Secretary.

Proposed by Mr. THOS. GREAVES, seconded by Mr. S. LOCKE, that a very hearty vote of thanks be accorded to Prof. Williams, which was carried by acclamation.

The usual vote of thanks to the President terminated the meeting.

ARTHUR LEATHER, *Hon. Sec.*

## ROYAL AGRICULTURAL SOCIETY.

At the monthly meeting, held on November 2nd, Sir John Thorold stated that the following report had been received from Professor Brown:—

### *Pleuro-pneumonia.*

This disease increased to some extent in England during July and the beginning of August, but during September and the first three weeks of October decreased again to nearly its average rate of prevalence.

In Scotland the disease was much more prevalent than in England during the first six months of the year, but began to decrease in July, and for the past few weeks the number of outbreaks has been less than in England, the last published return showing only two outbreaks in Scotland in a week. Swine Fever has decreased during the past two months, the outbreaks being now about 100 per week, as compared with nearly double that number in June and July.

*Anthrax.*

Anthrax still continues to maintain about the same rate of prevalence as it has done during the past six months.

*Eruptive Disease of Cows.*

The inquiry into the nature of the eruptive disease of the teats of cows known as the Hendon Cow Disease is now being actively carried on, and some important evidence has been obtained. But up to the present time none of the cases of disease in cows have proved to be in any way associated with Scarlatina in the districts in which the milk was distributed.

The Committee regretted that further investigations in regard to the protective value of inoculation for Quarter Ill and other contagious diseases cannot be carried out except by operators individually licensed, and that in consequence of a misunderstanding as to the state of the law on this point, Professor Robertson is at present unable to continue his inquiries.

Colonel KINGSCOTE commented upon the action which had been taken by the anti-vivisectionists in moving the Home Office to interfere with Professor Robertson's investigations, and suggested that perhaps Professor Brown could give them some information on the subject.

Professor BROWN said that there were two points in the case which he wished to make clear—one as to the employment by the licensee of an unlicensed assistant, and the other as to experiments in inoculation. A general impression prevailed that a man holding a license was at liberty to employ an assistant; but in a letter which he had received from the Home Office, in reply to his inquiries, it was stated that such a course was decidedly illegal, and was also undesirable. Moreover, not only must the experiments be performed by a person holding a license, but they must be carried out in the place registered for the purpose. As to the performance of experiments for inoculation, he had obtained from the authorities an opinion that inoculation performed for the purpose of protecting animals from disease would not come within the meaning of the Act, but experiments for the purpose of finding out whether inoculation would benefit animals would do so. He therefore came to the conclusion that it would be necessary to discontinue the inquiry in regard to Swine Fever.

Mr. JAMES HOWARD thought that the arrangements respecting the contagious diseases of animals were in a very unsatisfactory condition. The stock-owners of England did not know which body to look to for instruction and guidance. A central authority was required for this purpose, and he (Mr. Howard) recommended to the attention of the Veterinary Committee the desirability of coming to some understanding with the Agricultural Department of the Privy Council on the subject.

Sir JOHN THOROLD gave notice that at the next meeting of Council the Committee would move for their annual grant of £500, of which sum they recommended that £200 be granted to the Royal Veterinary College in aid of the further development of cattle pathology. With regard to the grant of £200, a letter had been received from the Principal, Professor Robertson, explaining that since the Council had acceded to the application of the Governors for an annual grant, means had been taken to extend and perfect the course of instruction given at the College with regard to cattle pathology. So far as carried out at the present time, these include:—

1. The delivery of one extra lecture each week on the subject of diseases affecting other animals of the farm than the horse.
2. Providing means for the purchase of specimens, morbid and healthy, to illustrate these lectures.
3. Maintaining at the College a stated number of cows in calf, so that the students may have the opportunity of becoming practically acquainted with



the management of parturition, and of the diseases affecting cows at this critical period of their life.

4. Furnishing a bed-room, where students may, when deemed needful, be lodged over-night when attending these cases of parturition.

Other means of extending and improving the instruction in all matters relating to disease affecting this particular class of farm-stock will be adopted as the governing body believe to be advantageous, and the means at the disposal of the College will permit.

#### BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

A GENERAL meeting of the above society was held at the Bush Hotel, Carlisle, on the 14th of October. *Present*:—A. J. MacIntosh, Esq. (President), in the chair; Professor Williams, Edinburgh; Messrs. Soulsby, Workington; Carlisle, Bell, sen., Bell, jun., Dawson, McCauley, Carlisle; Donald, Wigton; Thompson (treasurer), Aspatria; Howe, Keswick; Crondace, Haltwhistle; Chalmers, Longtown; Young, Cockermouth; Robson, Armstrong (sec.), Penrith. *Visitors*:—Messrs. F. Armstrong, Penrith; Ashley and Anderson, Wigton. Apologies were received from Professors Walley and Lewis, and Messrs. McConnell, Castle Douglas; Harrison, Burtergill; Pears, Langholm; Carruthers, Brampton; Hoadley, Eston.

The Secretary then read the minutes of the previous meeting, and they were adopted.

The following gentlemen were nominated to be elected members at the next general meeting:—Messrs. Trongbear, High Hesket; F. Armstrong, Penrith; Chalmers, Annan; Bell, Haltwhistle; Anderson, Hexham.

The election of office-bearers for the coming year was next proceeded with. Mr. Bell, Carlisle, was elected President. The following gentlemen were elected Vice-Presidents:—Messrs. Potts, Wigton; Young, Cockermouth; Soulsby, Workington; Crondace, Haltwhistle. The treasurer (Mr. Thompson) was re-elected; also Mr. J. Armstrong, the secretary.

Rule IV. of the Society's Rules was then considered, and it was decided to print the rule on the circulars convening the next meeting, and after that to enforce the rule.

Mr. J. SOULSBY, of Workington, then read a very able and well-compiled paper as follows:—

Mr. President and Gentlemen,—It would be absurd on my part, should I, in presenting this paper to you, claim any great excellence for it or myself. It is the characteristic of this age, that nothing can be done without receiving aid from science; and scientific men in furthering their objects can learn much from comparing notes, and from the free discussion of such special or peculiar cases as may from time to time come under their notice, and these, communicated and commented upon, for the general benefit of all. No science is more noble or more interesting than that of medicine; and we claim for our profession, as veterinary surgeons, notwithstanding the great drawbacks under which we labour, in having to deal with dumb creatures, that it is as far advanced at the present day as the sister profession or that of human practice. We have like them much to learn, and it should afford us all great pleasure in giving up for our mutual benefit any new experience or other matter of interest which may come under our notice in our daily practice.

I have been asked to read a paper, and have chosen for its subject, "Tetanus," a disease most interesting to our profession, and the few notes—I cannot call them more—I have collected together, will have to do duty for my paper. The reason I consented to read a paper, and selected this subject, gentlemen, was on account of my having a very singular case in my hands at the time, singular, as it arose from a peculiar cause. I should also like to

submit to your notice a case of "Open Joint" I had under my care a few months ago, more with regard to the treatment I adopted, which surprised me at its success.

*Tetanus*, or Lock-jaw, is the name given to that disease of the nervous system, where we get tonic or continued spasm of most of the voluntary muscles of the body, which spasm is not under the control of the animal.

There are many different theories as to the nature of this disease, but the one generally accepted is that, in Traumatic Tetanus, or that variety which is brought about by the infliction of injuries, the extremities of the afferent nerves of the wound or wounds are irritated to such an extent, either by dirt, noxious gases, dressing with too strong lotions, or the two edges of the wound, during the healing process, closing on the extremities of the nerves; which irritation is conveyed to the different nerve centres, and causes an exalted polarity of those centres. This theory is strengthened by *post-mortem* examinations, when we nearly always find along the course of the nerves supplying the wounded structures, congested patches and thickening of the nerve. But it is a very difficult matter to form a correct opinion as to the nature of this disease. From my own observations of the cases I have been called to, I think there must be some peculiar susceptibility in the animal affected; it may be an unhealthy condition of the body. We must all have noticed that the disease is most often met with in animals that are improperly fed and housed in badly ventilated and overcrowded stables, and neglected generally. I do not say that Tetanus will not affect an animal that is in every way carefully attended to, but we find the majority of cases the other way. On the other hand, if we take a certain number of animals that are stabled, fed, and looked after exactly alike, and having wounds on them essentially similar in extent—for instance, in castration or docking—we may find one or two perhaps affected with Tetanus, and very likely those that are affected are animals we never for a moment thought would take the disease. At one time I always made it a rule, when called to a case of wound in the horse, to inquire if the patient was nervous or irritable, as I was under the impression that that class of animal was more liable than that of a sluggish temperament; but I have found quite as many cases in one as the other. These facts point out, I think, that there certainly must be some peculiar condition of the body at the time the wounds are received, when Tetanus supervenes; but what that condition is it is impossible to say. There is also, I think, much to be said with reference to atmospheric conditions, and the climate of the locality or district; as instances, I noticed, in a very extensive practice where I was an assistant, viz., at Stevenage, in Herts, only one case. At Worcester, where I was also an assistant, the percentage was certainly greater, and I was exactly eighteen months at each place, but not anything like what it is either at Workington or Whitehaven, and I may add that likely cases for Tetanus were quite as common in one place as in the other.

All the animals we are called to are liable to be the subjects of this disease, but we mostly see it in the horse, now and again in sheep, but very rarely in cattle; and is spoken of as Traumatic, following wounds of all kinds, bruises, etc., and Idiopathic, that which arises from no appreciable cause; but I think, from the inquiries I have made from different veterinary surgeons, and my own observations, nearly all the cases we are called upon to treat are due to wounds of one kind or another, except in cases brought about by exposure to cold and fatigue.

The exciting causes of Tetanus are wounds, bruises, fractures of bone, and operations, such as docking and castration; and in our patients it is generally some time after the infliction of the wound that the disease manifests itself. I remember one case I was attending where the disease did not show itself until between three and four weeks after the wound was



received; in fact, I had discontinued my visits, as the wound was nearly healed.

We generally find Tetanus following wounds on prominent surfaces of the body. I mean by prominent, those parts that are liable to continued irritation, as the knee or any joint of the legs, the back—as in saddle galls, where the saddle irritates; or when the wound on the tail, after docking, is irritated by friction against the front of the cart, or rubbing against the stall in the stable.

The extent of wounded surface has really nothing to do with the liability of an animal to become affected, as we often see it following wounds that are very slight. We very often get it in castration and docking. I think the majority of cases following castration occur when the operation has been performed by caustic clams; I come to this conclusion from the fact that nearly all the cases I have heard of—I never had one myself—have followed after operating with the clams.

Tetanus very often follows pricks in the feet, and, as in the case to which I wish to draw your attention, Chronic Laminitis, together with the shoe pressing on the sole. I never heard of Laminitis causing Tetanus before, and I was very much surprised that such was the case; I could not be mistaken that this case was due to Laminitis, as there was no other apparent cause whatever. My treatment of this case I will give in due time.

Another cause of this disease is exposure to cold and wet, especially after clipping and fatigue. I remember, a few years ago, being called to a mare that had been embedded in a bog. It was a raw, wet, cold day. She had struggled for a number of hours. I saw her a short time after she had been extricated, and found her terribly exhausted and suffering from acute Tetanus, from which she died the same day. I have heard of cases similar to this in sheep, after shearing, when the animals have been turned out, the weather being wet and cold.

The symptoms of this disease cannot very easily be mistaken. There are several forms of it, viz.:—When we get the facial and masticatory muscles affected it is spoken of as Trismus; Opisthonotos is the term used when the muscles of the back and neck are involved; Emprosthotonos is the condition directly opposed to the latter; when the muscles of the side are affected it is spoken of as Pleurosthotonos. But in the horse we always find the different forms existent at the same time. If we are called in at the commencement of an attack, we find the animal with his nose elevated and protruded, and the nostrils dilated, with a very anxious expression; and, if eating, he chews his food with difficulty and swallows with a decided jerk, as if he had a sore throat; and, if the fingers are inserted into the side of his mouth, a quantity of saliva will drop out; sometimes the saliva gathers round the angles of the mouth.

The throat externally looks to be quite swollen, and when we feel it we find it quite tense and hard. I have known cases where this symptom has led the owner to think the animal was suffering from Strangles. In fact, the last case I had the owner of the horse said I had to take a lance with me, as I would find the throat would require lancing. When I saw the patient it was a decided case of Tetanus, and the animal had been affected four or five days.

We also find the tail elevated, and very often it has a continuous trembling motion. The limbs are set wide apart, and when the patient moves he scrambles along rather than walks, and bends his limbs with great difficulty. The muscles of the back and loins are quite rigid and feel very hard. The patient being approached quietly, the pulse will be found not very much altered in number, but in character it will feel hard under the finger.

The temperature is certainly raised, but not to any great extent—not more

than 103° F., unless the case is one of a very acute character. In severe cases we often get very profuse sweating; I have seen cases where the animal appeared as if buckets of warm water had been thrown over it, and the box has been filled with steam. In many cases we do not get the jaws completely locked; in fact, the animal may be able to eat hay or grass and drink water, the desire to do so is constantly present. The bowels are, as a rule, constipated. All these symptoms may become intensified by many circumstances, such as making noises, too suddenly approaching the patient, sudden flashes of light, and even loud talking; and I have seen a case when the mere touching of the slings supporting the animal has caused it to scream out with agony.

During the course of the disease we get periods of increased spasm; and if the animal is getting worse, these periods keep recurring with such frequency that the poor beast at last falls down from sheer exhaustion, and dies either from inability of the diaphragm to act properly, or it may be from spasm of the muscular fibres of the heart.

We may generally form a pretty correct opinion as to the termination of a case of Tetanus by paying particular attention to the periods of increased spasm, the ability to open the jaws, and to the temperature. If after the fourth or fifth day the spasms do not increase in frequency, and the jaws do not become entirely locked, with no further increase of temperature, then we may presume the case will end favourably. But in all localities, and under every circumstance, Tetanus is a very serious complaint, and the number of recoveries are not numerous.

In our treatment of Tetanus we are necessarily very much handicapped by our inability to administer medicine, and by the animal not being able to take food. In most cases we are not called in until the patient is far gone in the disease, and from the first we see the case cannot possibly be brought through, and in these cases I, myself, think it wisest to advise the owner to have the poor beast at once slaughtered. But in those cases where we may think there is a reasonable chance of recovery, the first thing to be done is to have the animal put into a clean, dry loose box, well ventilated, but exclude as much light as possible. I generally have sacks nailed over any open windows or fissures there may be in the box; they exclude the light without impeding the ventilation—the latter, in my opinion, ought always to be carefully looked to. For bedding I prefer cut straw, when it is to be got, as an animal can move about with more freedom than he can on whole straw. When these instructions have been carried out, I always ask for the man who will attend to the patient, and give the key of the box into his possession, and inform him that he has on no account to let any one go near the animal, but himself. Some practitioners prefer the use of slings to all cases of Tetanus, but from my own experience I fail to see any benefit to be derived from them. I used to use them at one time, but do not do so now; and I have had quite as much success, if not more, since discontinuing the use of them, one reason being—and the main one—as in the case before mentioned, the slightest movement or touch upon the slings causes pain; and I think if a case is so far advanced that it is necessary to sling it, it is too far advanced for any chance of recovery.

It is always desirable to administer a dose of physic if it is possible. Very often at the commencement of a case the jaws can be partially opened and a ball given by the aid of a balling gun—very seldom we are able to give one with the hand. If I cannot give a ball I give linseed oil in mashes, which the animal very readily takes; I never had one refuse this. After the bowels have been nicely moved they can very easily be kept regular and loose by mashes, gruel, etc. In the drinking water many medicinal agents may be given. I have had most success from the use of hydrocyanic acid,



given in  $\text{zj}$  doses three times a day, with occasionally a  $\text{zj}$  of ext. belladonna. The hydrocyanic acid is more readily taken when given in hay-tea, the smell of the acid is not so appreciable as when given in water. The belladonna I smear over the molar teeth as high as I can get it. Tinct. aconite, chloroform, bromide of potassium, chloral hydrate, injectio physostigmiae, and tinct. calabar bean have all advocates. I have not used any of these agents, with the exception of tinct. aconite, from the use of which I have seen good results, but I prefer to rely on hydrocyanic acid. In cases of Traumatic Tetanus it is always policy to dress the wound with some sedative application. I apply, when practicable, a linseed meal poultice medicated with belladonna; I also use a dressing of glycerine and belladonna—one dram belladonna to four of glycerine—and paint the wound with it three or four times a day. Blisters and skins taken from newly-killed sheep applied along the back of the patient have been advocated, but I should think this treatment would not be advisable, on account of the irritation that would be set up, and I think you will all agree with me that the quieter an animal is kept the greater chance there is of a favourable issue.

The case I have before alluded to, due to chronic Laminitis, was in a brood cart-mare, and she was due, at the time I was called to see her, to foal in six weeks; I need not say that this complicated matters. I found she had very bad feet, the toe of the pedal bone having dropped, and her soles quite convex, with the wall of the foot broken away. I had the shoes at once removed, and pared the sole as thin as I could get it; I then put her feet into bran poultices, with a good foundation of hay in the bottom of each sack, and by my orders the poultices were kept warm and moist by the attendant pouring warm water into the top of each bag four or five times a day, the poultices being changed once a day. I found the bowels were much constipated, and being unable to administer a ball on account of my inability to open her jaws more than an inch, I gave her in a sloppy mash  $\text{3x}$  linseed oil, and six hours after another  $\text{3x}$ , both of which she took very readily. I also gave her hydrocyanic acid in  $\text{zj}$  doses three times during the afternoon and night in hay-tea. The next day her bowels were acting as well as I could wish. I continued the same treatment for a fortnight, alternating the acid with  $\text{zj}$  doses of ext. belladonna, which I smeared over her molar teeth. I had no occasion to give any more linseed oil after the first day, as her bowels were never constipated again. At the end of three weeks she was so far recovered that I had her shod and turned out to grass for a couple of hours each day, and in about three weeks after that she gave birth to a fine colt foal. I was tempted to put this case in slings, but am quite satisfied she did as well without them.

I shall now, with your kind permission, draw your attention to a case of Open-joint. The patient was again a cart-horse. It received, when walking over a refuse heap, a clean deep cut, about an inch above the coronary band and exactly in front of the off hind leg. The horse went to work on the second day after receiving the wound, it appeared so slight and showed no signs of lameness, and worked for two days; on the third day I was called in, when I found the animal could not put his foot to the ground—in fact, he travelled on three legs. My diagnosis was Open-joint. I applied the usual astringent treatment, and the wound closed on the third day; but broke out again three days after, and discharged synovia copiously. I then applied a blister, which stopped the discharge for five days, when it broke out again worse than before. The case had now I considered become very serious. As I had carte-blanche to act as I liked, the owners and others, who were not by any means men of inexperience on such matters, being of opinion the case was hopeless, I determined upon a course of treatment, departing out of the usual course, which fortunately turned out a complete success. The

treatment I adopted was as follows:—I had the wound and surroundings cleaned from all discharge and foreign matter ; then syringed the wound well out with a solution of Liq. Ferri Perchlor. (1 to 16), after which I introduced as far in the wound as I could get it as much Iodoform as it would take, also sprinkled some round the edges of the wound, and applied a bandage pretty tightly over the whole. For six hours the animal evinced signs of great pain, but after that the pain subsided, and next morning the patient was standing on that foot and resting the other. I left the bandage on for two days, and when I removed it I found less discharge than would cover a two-shilling piece. Thinking it well, however, to repeat the application, I again dressed and bound up the part as before, and left it so for another two days, and when I removed the bandage the wound was nearly healed. The animal trotted lame for two or three weeks after, but this I am satisfied was mere education, together with perhaps slight contraction of the tendons from resting the foot. The horse is still under my notice, and is now perfectly sound.

We are all aware, and as I have before remarked, the objects of these papers are advancement and mutual benefit, and however feebly my pen has transmitted my thoughts to paper, it has been cheerfully done, and if I have been the means in the slightest degree of adding to the general store of knowledge which we are all daily gaining, however old or young we may be, I shall be more than paid for my trouble.

I thank you, gentlemen, very kindly for the kind and attentive hearing you have given me.

The CHAIRMAN then invited discussion on Mr. Soulsby's papers.

Mr. BELL : I think we must be very much obliged indeed for the very able papers given by Mr. Soulsby. He has covered the whole ground. Cases of Tetanus vary very much indeed in their character. I have always myself been an advocate for slinging cases after a certain number of days have elapsed, because I find that once the animal gets down it is hopeless. I have often very great trouble in getting medicine into my patients. I have found the administration of chloral hydrate very successful. With respect to Open-joint, I am glad that Mr. Soulsby has tested the injection into the joint. I intend to try it on the first case that comes under my notice.

Mr. YOUNG described two cases of Open-joint, where he had been successful in treating them with a blister around the opening and painting the wound directly with *Ol. caryophylli*.

Mr. DAWSON thought that Open-joint had a great deal to do with the locality. I have had very great success with cold water alone ; cold water continuously applied for a couple of days will stop the effusion. But it is different with the knee ; the standing makes it difficult to stop, and I have very little doubt but that the applications referred to would be very beneficial.

Mr. HOWE confirmed what Mr. Dawson had said, and quoted a case he had where the animal was in a field, and the wound was washed with plenty of clean cold water and a dry bandage put on, and the wound healed very quickly.

Mr. THOMPSON : I am sure I have had very great pleasure in listening to Mr. Soulsby's two papers, as they are both very important. I think Tetanus a frightful disease, whether it be in the human or animal creation. From what I have read and seen of this disease, I think it is nearly allied to Hydrophobia. He described cases within his own recent experience, one of which was the result of a groom docking a horse's tail with a knife and mallet. I have seen a good few cases of Open-joint successfully treated with cold water. Success in the treatment of Open-joint all depends on the extent of injury done to the ligaments. With respect to Tetanus, I believe it is very rare in the bottom of pits. Injuries to the feet are common there, yet there



are few if any cases of Tetanus. I am under the impression that Tetanus is due more to the atmospheric influences than anything else.

Mr. HOWE referred to two cases where colts had been taken to be shod for the first time and docked at the same time, and they both had Tetanus as a result, and died.

Mr. CARLISLE: Docking is a very serious operation; but still, as far as my experience goes, there are as few cases of Tetanus as a result as from any other operation. The greatest number of cases result from affections in the extreme parts of the body, as the foot, nose, and tail. In cases of Tetanus, I invariably have them slung and in a quiet place, and keep them quiet and dark. In Open-joint I very often sling my patients, as there is as much need of keeping the patient quiet here as in Tetanus. Simple cases of Open-joint can easily be cured by cold water, but in other cases I don't see what effect it can have. Now and then I have had to take a hot iron; it has a capital tendency to bring about healthy action, and if you can get that, the healing process takes place very soon.

Mr. BELL and Mr. YOUNG both supported Mr. Thompson's theory that Tetanus was greatly influenced by atmospheric changes.

The CHAIRMAN: I have seen some cases of Tetanus, and my experience coincides very much with the opinions given by some of the gentlemen. I am perfectly satisfied that if you are to have successful cases, you must have slings used on most of them. You may get your animal through the early or acute stages of the disease, but he becomes exhausted from the standing. I have had frequent cause for regret for not using slings. In very acute cases, in spite of all you can do, they never reach the stage for slinging. I have seen one case where the horse became so restive in slings, that he had to be taken out, and he did very well without them. With regard to treatment, the animal ought to be fed with food that he can suck, and I will use linseed oil in the mash on the first opportunity, as advocated by Mr. Soulsby. The medicines used are various, and it is best to be guided by the condition of your patient. With regard to Open-joint, I would like to say a few words in the case of a punctured open joint. In the first and most acute inflammatory stage, irrigation with cold water is invaluable. This I have tested, and if you can get it from a hose and applied constantly, it is not only invaluable, but it is reasonable to think so. You must first reduce the inflammation of the joint, and after that is done, there is nothing better than an extensive plaster over the joint, and then sling your animal, if necessary, and keep him as quiet as possible.

Mr. CRONDACE, referring to what Mr. Thompson said about the absence of Tetanus in pits, said that he had had one recently in a coal-pit as a result of a pricked foot.

Mr. SOULSBY: As regards slinging in cases of Tetanus in horses, the last three cases that went down under my treatment were all slung, and everyone of them knocked themselves about so much from the second to the fourth day, that I thought I would never put any in slings again. I have had two since then, and both did well without the use of slings at all. I find that animals will almost take anything when suffering from Tetanus in the gruel given to them as food, and I usually administer all medicines in this manner. I do not often use hypodermic injections, as I find that the patient usually resents it, and I would sooner let them alone than have them struggling. With respect to cold water in Open-joint, I have tried that in a number of cases, and at the second or third day it is very often stopped. You must get the germs of the disease killed or otherwise done away, before you can stop the discharge.

Professor Williams here came into the room, and the Chairman explained the position of the discussion, and invited him to give the members any information on the subjects touched upon that he would.

Professor WILLIAMS ; With respect to Tetanus, it was a common ailment in the neighbourhood of Edinburgh particularly. My practice, as to well-marked cases, is to put them into slings quickly in a dark place, before the disease arrived at its greatest intensity. You may get the horse used to slings before the spasms are severe, and he was not thrown into convulsions, as he would be if the slings were kept away. Putting the horse into a dark place prevented the horse being tormented by flies. He then described his medicinal treatment. Tetanus is a disease which requires at least a month for recovery in the most favourable cases, other cases six weeks or two months. Medicine was only of good in the case of relaxing the system. No medicine has the power of cutting short the disease, only by causing relaxation when the animal is in extreme danger of suffocation. In France cocaine had been injected into the muscles of the face, and a case had been recorded where recovery had taken place in a couple of days. But I could not believe that to be a true case of Tetanus. The treatment has greatly improved lately, for every one saved in the past, five or six recovered now, and nothing will excel the use of belladonna and atropia, with quietness. With regard to Open-joint, I read a short paper at Newcastle, and since then I have had other cases not there referred to. I have treated cases by antiseptic surgery that were well in three days, which by any other treatment would have required a couple of months. By applying antiseptic surgery we may prevent the germs getting into the joints, and the repairing process will go on at once.

MR. BELL moved a hearty vote of thanks to Mr. Soulsby, which was carried unanimously ; and Mr. SOULSBY moved a vote of thanks to the Chairman, which was also carried unanimously. This terminated the meeting.

JOHN ARMSTRONG, *Hon. Sec.*

#### YORKSHIRE VETERINARY SOCIETY.

THE last quarterly meeting of the year was held at the Queen's Hotel, Leeds, on the 28th October, the President, Mr. G. W. Carter, in the chair. The following members were also present, viz., Prof. J. W. Axe, Messrs. T. Greaves, Anderton, J. M. Axe, Atcherley, G. Bowman, Jos. Carter, Deighton, Greenhalgh, Hardie, Lodge, Pratt, Pickering, Scriven, Geo. Schofield, Snarry, Mason, Chambers, Robinson, Briggs, Hanson, Smith, Whitehead, and the Secretary. Mr. W. J. Fletcher, F.R.C.V.S., Sheffield, and Dr. Green, Leeds, were present as visitors.

Excuses for non-attendance were received from Prof. Williams, Messrs. E. C. Dray, Cooper, Danby, Bale, and P. Carter.

The minutes of the last meeting were read and confirmed.

Mr. Jas. Thornton, F.R.C.V.S., Thirsk, was proposed by the PRESIDENT, and seconded by Mr. BROUGHTON.—Carried.

Mr. Joe Clarkson, M.R.C.V.S., Apperley Bridge, was proposed by Mr. SCRIVEN, and seconded by Mr. ANDERTON.—Carried.

Mr. DEIGHTON, Riccall, called the attention of the members to an outbreak occurring among calves on a farm. The animals affected were nearly without exception well-bred bull calves from four to fifteen months old ; the symptoms very much resembled those of Rheumatism, the swellings occurring especially in the shoulder, knee, and stifle, the animal evincing great pain when moved. It was a rule on the farm that each calf should suck its mother up to three months, after which the food consisted of turnips, rice, chopped straw, etc. Treatment seemed to have no effect.

Mr. TOOP remembered a similar outbreak, and had exhibited the salicylate of soda with success, and the application of blisters.

Prof. AXE thought that the outbreak needed considerable care in coming to



a correct conclusion as to what was the disease, and also the cause, and suggested that a committee should be appointed by the Society to meet Mr. Deighton, and investigate in detail the whole circumstances on the spot, and to report their decision to a subsequent meeting.

Mr. GREAVES had seen a similar outbreak in calves, and thought that it was due to the feeding or lead-poisoning.

Mr. BROUGHTON moved, and Mr. GREENHALGH seconded, that a deputation, consisting of the President, Prof. Axe, Messrs. Briggs, Toop, and Hardie should be appointed to meet Mr. Deighton and report on the matter. This motion was adopted.

Professor AXE then delivered a lecture on the cow in relation to Scarlatina of man.

The lecturer first drew the attention of the meeting to milk as a vehicle by which fevers were disseminated, pointing out how frequently this fluid had in recent years been found to bear the contagium of such ailments, as Scarlatina, Diphtheria, and Typhoid Fever into the dwellings of all classes of people, and to occasion widespread sickness and mortality.

Recently, he remarked, epidemiologists had endeavoured to show that not only was the produce of the cow a medium for the conveyance of specific infection, but that so far as concerned Scarlatina the cow herself was capable of incubating and giving out the virus of the disease.

This idea had been put forward on several occasions as a possible explanation of fever outbreaks, but it had only recently been alleged to have actually occurred.

The Professor then referred to an outbreak of Scarlet Fever in the north-west district of London, which had been attributed by Mr. Power, of the Local Government Board, to an eruptive disease on the teats of a herd of cows located on a dairy farm at Hendon.

The details of this case were fully described and commented upon.

Professor Axe then followed step by step the investigations undertaken by Dr. Klein into the nature of the Hendon cow disease, and its bearing on the general question of Scarlatina as a cow malady.

The more recent researches of Dr. Edington, of Edinburgh, into the nature of the contagium of Scarlatina were then related, and the discrepancies between the results obtained by that gentleman and Dr. Klein were pointed out.

A full report of this lecture will be published later on.

After the reading of the essay a discussion took place as to the nature of the disease affecting the cows in question.

Messrs. ANDERTON, B. SMITH, and GEO. SCHOFIELD were of opinion that the disease was Cow-pox; they had never known analogous symptoms produced as those described by Prof. Axe.

Mr. BROUGHTON thought it was not at all clear as to the nature of the malady, and thought it might be a mild form of Eczema developed *in transitu* between the Midlands and London.

A unanimous vote thanks was accorded to Prof. Axe for his most interesting lecture.

The Treasurer read his financial statement, balance in hand £61 9s. 5d., which was adopted, on the motion of Mr. TOOP, seconded by Mr. SCHOFIELD.

Election of officers for 1888 then took place, Mr. Philip Deighton being proposed by Mr. GREAVES as President, seconded by Mr. SCRIVEN; carried unanimously.

The ex-President, Mr. Geo. Carter, W. Lodge, and G. Hardie were elected Vice-Presidents; the Secretary and Treasurer were re-elected.

A cordial vote of thanks was given to Mr. Carter for his efficient services in the chair, to which he suitably replied.

## THE CENTRAL VETERINARY MEDICAL SOCIETY.

THE first general meeting of this Society was held at the First Avenue Hotel, Holborn, on Thursday, Nov. 3rd, 1887.

*Present*:—Charles Sheather, Esq., President (in the chair); Dr. Fleming, C.B., Sir Henry Simpson, Professors Pritchard and Shave, Messrs. Broad (3), Cheeseman, Chesterman, Elworthy, Gibbings, Hall-Brown, Harrison, Herron, Hunting, Lowe, Oatway, Overed, Roots, Rowe, Samson, Sewell, J. F. Simpson, Woodger, Wragg, and the Secretary. A. Hill, Esq., Secretary of the Royal College of Veterinary Surgeons, and six other gentleman were present as visitors.

Apologies for non-attendance were received from Professors Axe, Penberthy, and Walley; from Messrs. Banham, Caton, Roalfe Cox, Mulvey, Moore, Price, Rickards, Roberts, Slocock, Fred Smith, A.V.D., South (2), and H. Withers; a telegram was received from Professor Pritchard, who, being detained in the country, was not able to join the meeting until later in the evening.

The SECRETARY read the minutes of the last meeting, and the PRESIDENT, in delivering an address inaugurating his term of office, thanked the Society for electing him to his present position, and expressed the pleasure which he felt in accepting the office. He said that he had already been promised by several gentlemen an almost sufficient number of papers to satisfy the requirements of the coming session.

The Society, according to its rules, was constituted for the purpose of advancing veterinary science in general. The advancement of the science necessitated that the individuals who practised the science should be themselves advancing. There was no space for retrogression, and the Society must not stand still. Men who had entered practice must cultivate habits of close observation, and students and pupils who were hereafter to become veterinary surgeons should have the best education, general and professional, which it was possible to afford them. As to science, it proceeded very rapidly nowadays, and students should have a thorough acquaintance with it in all its branches affecting veterinary matters; but, as well as that, they ought to have a thorough practical understanding of the duties which they would be required to perform in the course of the practice of their profession. A great difficulty has been felt at the present time in deciding in what way these objects could be best accomplished. He thought that nothing could be more inimical to the best interests of the profession in a matter of this kind, than to rest in an uncertain or chaotic state. If rules were made for the education of students at one moment and then, very shortly afterwards, altered and cut about till the original plan was almost lost, a deal of unpleasantness would be created among the members of the profession, and the public would lose confidence in our ability to manage our own affairs. Besides this, students would not know what they would have to do, and the parents of students would not know how their sons ought to be prepared for their professional studies. Upon the whole, a very disquieting effect would be produced if sound fundamental principles be not adopted. As the matter was now being taken in hand, he thought that it ought to be effectually settled, and that whatever was decided upon should be adhered to. This was most important, even if the best scheme were not adopted.

There were many qualifications needed in a youth who intended to follow the veterinary profession. First of all, he must know something about animals; this was a necessity, although it was not commonly recognised. The leaning



and yearning of the veterinary student ought to be towards animals. In the next place, the student ought to have a good general education—a better education than the student of the present and of the past has had. This was very essential. To attain what he considered to be the necessary general education, the student must have intelligence. Without this he could never succeed in his profession; and the value of the test of general education was much overlooked in estimating ability and probable success. Beyond a good general education, he needed physical and mental abilities out of the common order. He needed a frame which would withstand fatigue and long hours, while he needed also an accurate perception, with ability to observe and remember small matters, such as the general run of life did not demand. In addition to these qualifications, the student required a special training, both scientific and practical, for the profession which he was to follow. A great deal of misunderstanding seemed to exist with regard to that point, and persons divorced the scientific from the practical. The good practitioner carried his science into practice—he made use of the drill, learned in peace in the prosecution of his war against disease. In practice one met with the so-called thoroughly practical men who discarded and neglected to apply all that they had learnt, and went on by the rule of thumb to the end of their days. The older such men got, the smaller became their experience, for they never tried to observe anything fresh. They simply went on doing what had been done before them, resolutely resisting innovations. The great aim nowadays should be to instill into the young practitioner the necessity of cultivating all the sciences that were connected intimately with his profession and bringing them into daily practice. This could be done and had been done, and he saw no reason whatever why practice and theory, as it was called, but more correctly practice and science, should be divorced.

There was, however, great difficulty in attaining this result. There was a great deal of difference of opinion as to whether a young man should see practical work first or go to college first and receive a scientific education. Upon that point he entertained some strong opinions, but he believed that his observations bore out their justice. If a period of inactivity were allowed between the time a student left school and the time he entered college, he contracted slothful habits, as a rule, though he did so unconsciously; when his mind ought to be most active and prepared for receiving more knowledge, he slowly drifted back and got rusty. Therefore he believed that one of the best things that could be done was to put a youth as a pupil with a veterinary surgeon, so that his time might be filled up and he might be rendered active, for mental capacities improve with exercise as much as physical. At the same time, the pupil would acquire a large amount of knowledge (not always purely professional) which would be useful to him in future life and benefit him. He believed that the youth should then pass to a school and be educated there in the best possible manner. Upon the subject of the education at the schools, he (the President) had his own ideas. He passed through one of the schools about ten years ago, and his recollections were very bright about what happened then. He had had occasion to observe how students pass through the schools at the present time. His opinion was that, during twenty-two months' actual study at the present time, only as much, if as much, knowledge was got into the mind of the student as was got into it in fourteen months' actual study when he was himself a student. There was not the same amount of energy and zeal in the students themselves. The great fault was the doling out of the knowledge to them in spoonfuls. A man had chemistry, botany, and some other simple allied subjects to study, and possibly a little anatomy in the first six months. He found that the work was very easy-going and that he had little to do. He would read three subjects for the first month with a little zest, and he would

get on pretty well, but the continual working at them would cause him to get tired of them long before his six months were over. If he had two additional subjects, he would turn to them as a relief from the other three, and he would get on much faster in consequence of being able to change his attention, and not have his mind palled by continual application to a small number of subjects. He (the President) was sure that a great deal of misfortune which had befallen the students of late in their endeavours to pass the examination, was less due to themselves than to the system. He believed that getting a diploma in three grades or steps was a mistake. He thought that the students ought to be able to get it in two examinations, for if they had more subjects to be examined in at one time they would get through much better than they did at present, owing to their feeling the pressure and necessity to study more; as it is, they under-estimate their work and attack it leisurely. If a student was particularly good in his first session, he would get the first subjects at his fingers' ends; but by the time he got to his third session those subjects would be almost obliterated from his mind, and, having received the knowledge in three doles, he would not be able to make use of it or associate it with his other studies, and utilise them as one harmonious whole in his subsequent practice. A boy at school worked six or seven hours a day; a student at college worked three hours and loafed and smoked the rest of the time, and yet expected to pass his examination. There was nothing to compel the students to work. The tutorial system was undoubtedly the best if it could be carried out—in fact, the schoolmaster was still wanted. If a boy of sixteen were allowed the liberty of a man of thirty, he would be thirty in his less industrious habits before he was twenty-one. The weakness of the present veterinary student was attributable in a great measure to the present system and the absolute absence of private classes. He (the President) knew of no better place for a man to gain knowledge than a private class held out of college hours. In private classes the student got accustomed to question and answer, and his dignity was touched if he were asked questions which he ought to have been able to answer, but could not do so; and this led him very soon to obtain the information. But students in the college listened to lectures which passed in at one ear and out at the other—mechanically listening, but illumined with the necessary intellectual spirit. He thought that it was one of the greatest mistakes that the private class system should have disappeared. No doubt parents would think that private classes were unnecessary expenses—that their existence implied that the actual college instruction was short of its requirements—but he believed that that was a mistaken idea. It was better to work a student harder and keep him at the college a shorter time than to allow him to waste his time in taking two or three lectures a day and wandering aimlessly about the rest of the time, feeling an absurd security in his ability to master the subjects for the next examination, on account of their very paucity. He believed that it was never more needed than at the present time that the whole profession should give their support to the examining board, because, if the bar which is to be leaped before the student could enter the profession was lowered, the profession as a whole would suffer. The bar should be fixed higher, rather than lower. The standard of education should be raised. He did not think that it had been raised in the last ten years, or that the students were any further forward, considering the time they were studying. Instead of being splendid physiologists, excellent botanists, and thorough histologists and anatomists, he believed they were no better than they were when they had only fourteen months' actual study, and the reason was simply that pressure was not put on, and there was not the same inducement to get through that there was formerly, for, feeling that the curriculum was a long one, they



set about the studies with less energy and determination. If there was a difficulty about education at the college, one remedy was to increase the teaching staff. He believed that the colleges were somewhat overtaxed with regard to the number of pupils. Those who had not the energy to work for themselves got left behind and kept accumulating, and every extra examination introduced would tend to increase the accumulation, not relieve it. The good men always went through, whether they were properly taught or not; but those who formed the rank and file clogged the colleges with a band of rejected students of all grades, thus increasing their teacher's difficulties and decreasing their own chances of passing. There might be some improvements needed at the examination tables, but these might fairly be left to the Council, who know much more about it than the general profession could do. He thought that a written examination might be added to the oral examination with advantage, but the persons who prepared the papers for it must know something about what a written examination was. According to his (the President's) own experience, the time allowed for answering the questions was not sufficient. When he competed for the Fitzwygram prize, there were nine or more questions set on a certain subject, and only three hours allowed for answering them. One of these questions embraced "Laminitis," while in the competition for the Coleman medal that question constituted the sole one, and three hours (none too much) was allowed for it. If the examiner had sat down and tried to answer the questions himself, he would have found how impossible it would be for the student to answer them in the time. The student who had paid great attention to the subjects would go on the principle that a little well done was better than a large quantity scamped; while a student who had only a superficial knowledge would attempt all the questions and get the marks. In such a case the examiner would not know which was the best man, as he would in all probability construe that the man who laboured on the few questions did so because he knew little about the others. As to the oral examination, there was not much to be said against it, for it took place in an open manner, and one examiner could see what another was doing. One improvement, however, which he would suggest was that, when a student went into the examination room and took his place at a table, his mind should be directed to the subject upon which he was about to be examined. It would be useful to the student for the examiner to preface his questions by saying, "I am going to examine you in physiology," and it would do no harm if the examiner were further to narrow the compass and inform the student as to what portion of physiology he was going to deal with. In this way the student's mind would be directed to the subjects at once, and there would not be so many wild answers. If this were not done, the student might be unnerved and give the examiner a bad impression. He believed it to be a mistake to separate the practical examination from the scientific examination. Under such a system it might come about that a man's veterinary education would occupy many years of petty steps. The students required more tutorial education than they were getting at the present time. Young men of seventeen required to be under more control than the present system afforded. He (the President) had nothing more to add on this occasion. If he had not given the members of the Society a very satisfactory opening address, he had nevertheless put before them something to think about, and something to occupy them until the time arrived for the more pleasant occupation of dining. He must thank them for the kind attention which they had given to him.

Dr. FLEMING proposed, and Sir HENRY SIMPSON seconded, a vote of thanks to the President for his address, which was carried with acclamation. The PRESIDENT briefly responded, and the company adjourned to the "Windsor Room" for the annual dinner.

SIDNEY VILLAR, *Hon. Sec.*

**Obituary.**

The Secretary of the Royal College of Veterinary Surgeons reports the demise of the following members of the profession:—

Philip Wishart, Haddington, graduated...	...	...	...	1844
Alex. Robertson, Stonehaven	„	...	...	1844
William J. Johns, London	„	...	...	1856
Frederick Keal, late Liverpool	„	...	...	1868
John Dickson, Lennoxton, Stirling, graduated	...	...	...	1873

**Notes and News.**

**CONTAGIOUS PLEURO-PNEUMONIA IN GOATS.**—A very interesting note on the subject of lung disease among goats is given in a recently published consular report from Morocco. In the interior of that country goats form the staple part of the agricultural wealth of the rural and nomadic population, and among these a virulent form of lung disease, called “Bayoor,” is very prevalent. The principal symptoms of this disease, which is said not to attack sheep, but only goats, are stated to be that the hair drops off, the animal rapidly sickens, death ensues in two or three days, and the lungs, if a *post-mortem* examination be made, are found to be much enlarged and black. A curious kind of inoculation, said to be remarkably efficacious, is practised by a nomad tribe of Arabs called the Towbalt, great goat breeders, many of whom are found in the interior, and some in the vicinity of the seaports. It is stated that on the appearance of the “Bayoor” among their flocks, a portion of the diseased lung is taken from an animal that has died of the disease, and the other goats are inoculated each with a small piece. A slit is made in the ear, the bit of lung placed in it, and a slight cautery applied. Animals so treated are said not to be liable to the disease. It is stated that last year, while their neighbours lost hundreds of goats, the Towbalt saved nearly all theirs.

**PROTECTIVE INOCULATION FOR HYDROPHOBIA.**—The *Times* correspondent at Vienna, writing a review of the proceedings at the International Hygienic Congress (recently held in that city), states that the evidence of Dr. Ullman, assistant to Professor Albert, of Vienna, was strongly in favour of the Pasteur treatment for persons bitten by mad dogs. Dr. Ullman during the last year treated 122 persons. Only three died, or an average of 2·4 per cent. The mortality among persons bitten, and not treated, is estimated by various authorities at from 5 to 30 per cent. One instance—quoted by Dr. Ullman as having come under his own notice—is so cogent that it should be universally known. In a Polish town a mad dog bit five persons. Three submitted to the Pasteur treatment, and two refused. The two have died of Hydrophobia, and the three are all living. Dr. Bardoni, of Turin, and Professor Metschaniteoff, of Odessa, gave very similar testimony.

**THE VETERINARY PROFESSION.**—The *Live Stock Journal* of October 28th has the following:—In certain districts it has hitherto been the custom to look down upon the well-educated and well-instructed young veterinary surgeon as little better than the old-fashioned cow-doctor or farrier. Just now the veterinary colleges open for the full session, and it behoves us to say that, with the increased importance attached to live stock and horses in this country, the young veterinary surgeon who holds his diploma can, if he likes, take up a dignified position. There is no profession in England which holds such an important general charge, and it is satisfactory to notice the gradual disposition to accord to the veterinary surgeon the same place of trust and



confidence which is at present placed in the clergyman and the doctor. These are satisfactory signs of the times.

**TANACETIC RABIES.**—In continuing his researches on Tanacetic Rabies, M. Peyraud read a paper before the Academy of Sciences last week on the preventive action of the hydrate of chloral on this artificial malady and true Rabies. He instituted two series of experiments on rabbits and birds by intravenous injections with the essence of tanaisia, followed by the subcutaneous injections of chloral. In the first case after having produced the specific symptoms, he endeavoured to arrest their development by the subcutaneous injections of chloral, and it was thus remarked that when the tanacetic convulsions were established, the arrest of the malady did not take place. If, on the contrary, the animals were previously subjected to the action of chloral, and when they fell asleep or were simply drowsy, and a certain dose of the essence of tanaisia was administered, the convulsive effects were not produced, or were produced tardily, and after repeated doses of this essence, when the quantity of chloral was insufficient. From this result the author concludes that if the chloral had not a *curative* action on Tanacetic Rabies, it evidently had a *preventive* action. The discoveries of M. Pasteur on experimental Rabies gave M. Peyraud the idea of studying the two kinds of Rabies comparatively, and his experiments led to the following results: "On the 6th of March, 1887, I inoculated a large black rabbit by the submeningeal method, the rabic virus being taken from a man named Berger, who died six months after the Pasteurian vaccination, of Paralytic Rabies, in Dr. Pitres' ward. This virus was of the third series of inoculation of rabbits. The Paralytic Rabies of the preceding series always reached the fifteenth day. Six others (*temoins*) were at the same time inoculated with the same virus. All six died from Paralytic Rabies six months ago, but the black rabbit is still living. It manifested only a slight weakness about the sixteenth day of the inoculation. The rabbit was treated in the following manner: "On the 10th, 11th, and 12th March it was placed under a bell-glass, and subjected during two hours and a half to the action of the fumes of chloral, without its falling asleep. On the 13th, 14th, 15th, 16th, 17th, 18th, and 19th March the animal was injected subcutaneously with 10, 20, and 30 centigrammes of a solution of chloral (2 grammes to 250 grammes of water). The treatment lasted ten days, since which time it has not presented any morbid phenomenon, and it is probable that it will not become rabid, as it is now more than seven months since it was inoculated."

**AGE OF ANIMALS.**—A notice lately appeared of the death of a brown water spaniel at the age of twenty-eight years. She had belonged to the same owner from a puppy, and died literally of "sheer old age." A few months before, a cat died at the age of twenty-two years and two months. These are very unusual ages, though it is probable that some individuals have lived still longer. Herbivorous animals are generally thought to outlive carnivorous ones; and of the former class those dedicated to labour appear to furnish the largest number of instances of longevity. Two years ago a donkey died at Cromarty that was known to be at least 106 years old. It could be traced back to the year 1779, when, at an unknown age, it came into the hands of the then Ross of Cromarty; and it lived in the same family, "hale and hearty," until a kick from a horse ended its career. No horse is known to have attained to anything like such an age as this; but a few have lived to ages varying from forty to fifty years. A famous old barge-horse died at Warrington in his sixty-second year; and the oldest horse known in New York was, until quite recently, doing steady work there at thirty-eight years of age. A few months ago, also, a mule forty-six years old died at Philadelphia. Of all aged animals, the horse and the dog appeal most

nearly to human sympathies. It is not merely that they have been our faithful servants and friends, but there is a gravity, and almost a dignity in their bearing which is very touching. Many agencies are now at work for teaching the policy as well as the duty of kindness to animals; and of these, the sight of an old servitor loyally bestowed in paddock or kennel is not the least instructive. Nor need a charge of this kind be without profit. The care of our four-footed friends in their declining years may furnish many valuable lessons for the treatment of their still serviceable fellows.—*Live Stock Journ*

SPRATT'S FOOD.—The Australian mail just to hand gives particulars of the awards at the Adelaide International Exhibition, by which we see that Spratt's Patent Limited, as usual, have obtained the premier position, receiving the highest award. The Saltaire Exhibition just closed have also awarded this company a gold medal for their unique exhibits of dog, poultry, and game houses and appliances.

THE CANCER BACILLUS.—It is announced from Berlin that the cancer bacillus was discovered by Dr. Scheuerlen in the laboratory of the Charité Hospital there. The existence of the bacillus, which is oviform, has long been maintained as a theory, but this is the first occasion on which it has been identified.

SWINE FEVER IN DENMARK.—This disease which has been prevalent around Copenhagen lately, has now, in spite of the most energetic precautions immediately adopted by the Danish Government, spread to other parts of the kingdom. A decree has been issued prohibiting the sale of pigs at fairs and markets.

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## Correspondence.

### THE POLE-AXE IN PLEURO-PNEUMONIA *VERSUS* INOCULATION.

SIR,—Our inoculating friends keep coming forward and reiterating the extraordinary claims in favour of inoculation. I think it is only fair that the pole-axe and stamping out system should have its say, in order that we may see both sides of the question, and show how experiences differ. They claim to have only killed twenty-seven animals in six outbreaks. This is not a fair way to look at statistics, for in my experience it is as easy in recent outbreaks to stamp out Pleuro-pneumonia in a herd of twenty or more as it is in five. So those who are favoured with experience in large herds will have by the inoculator's mode of showing statistics more favourable figures, but, on the other hand, it is not the percentage we have saved we should look at; it is the percentage we have killed in order to stamp it out in recent outbreaks. They claim only to have killed twenty-seven animals in six outbreaks, "and these were slaughtered from time to time as they occurred," thus giving an average of  $4\frac{1}{2}$  to each outbreak.

In the last eleven outbreaks under my own observation, twenty-three animals were killed before we had it stamped out, giving an average of a little over two in each outbreak, and these outbreaks occurred in herds from three to twenty-one. So if we continue to keep Pleuro-pneumonia in check with as good results, there will be no necessity for us to resort to "wholesale slaughter, inoculation, inhumanity, waste of public money, or the sloat." Although our farms are small, and close together, having nearly 2,000 dairies in this parish (outside the borough), only once have I known Pleuro-pneumonia in a period of fifteen years conveyed from one farm to another. If I



understand the preliminaries of the inoculators, every means are taken to stamp out the disease by having all "plainly diseased" animals slaughtered. This is followed by a very haphazard system of condemning more, namely, "those brought to light by the thermometer, to share the same fate." I pity those poor animals whose slaughter or otherwise depends on the movement of mercury in a glass tube, an instrument only calculated to give degrees of temperature. It seems to me there is a greater latitude given ~~them~~ than is given to inspectors generally. There can be no two opi~~ons~~ it is a very effectual method of stamping out the disease, and t~~here~~ ~~is~~ ~~wherein~~ lies the whole secret and success of inoculation, a clear b~~lood~~ or health before operating. Our system is early reporting, early diagnosing, and prompt action. Where these measures are speedily and strictly carried out, we have little trouble in dealing with the disease as I have stated, and we feel satisfied that we are doing "our duty according to our light."

Halifax.

PARLANE M. WALKER, M.R.C.V.S.

### OUR POET LAUREATE.

DEAR Mr. Editor, fie, fie, for shame!  
 If this be a joke of yours, yours be the blame.  
 The doggerel you published in this month's Review  
 May be clever as nonsense—unworthy of you.  
 By your talent the "Journal" was brought to the fore:  
 An annal of science, what could you wish more?  
 Its readers *en masse* by right interfere,  
 Urging dry rubbish may not be shot here;  
 Of course *you* composed it, in harmless pretence  
 And assigned it in jest to a man of sound sense,  
 Who will no doubt forgive you, best hearted of men,  
 For no one believes it was born of his pen.  
 Do say 'tis a joke, for the thing has amazed,  
 And people are crying that somebody's crazed;  
 Do say in your next, is it he? is it you?  
 As the question is clamouring, Which of the two?

Nov. 15th, 1887,

"A READER."

DEAR SIR,—In a notice of a book of veterinary poetry, you quote some very affecting lines with regard to a lion which had a cruel thorn in its foot—

"A lion in its foot did get  
 A cruel thorn, which made it *sweat*  
 And hobble very sore."

Now, sir, I wish to ask whether members of the lion family ever sweat? I am inclined to think that the sudoriferous glands in the skin of these magnificent beasts are very imperfectly developed, and therefore to see a lion in a sweat is what no one ever witnessed. But perhaps the allusion was only poetical licence by an unlicensed poet.

"ZOOTOMIST."

[In answer to "A Reader," we beg to state that we are not the authors of the poems referred to. When we are attacked by the "divine afflatus," and have produced something, if it must be shown to friends it never gets beyond MS. Nearly always the housewife converts the latter into pipe lighters.

In reply to "Zootomist," we are sorry we cannot enlighten him as to the

perspiratory apparatus of the lion ; but we venture to point out to him that he has misquoted the lines : the word is "fret," not "sweat." *Hobbling* may cause an animal (even man) to fret, and under certain circumstances also to sweat, if there is any apparatus to produce the latter.—ED.]

### ADVERTISING.

SIR,—The enclosed advertisement appears in *The Isle of Man Times* for Saturday, November 5th, and as I happen to have been in practice in Douglas for about five years, I have certain misgivings that this announcement may perhaps be a breach of what has been written and spoken about so much lately as veterinary etiquette. I therefore send it to you for an expression of opinion.

Would a new chimney-sweep proclaim his advent by declaring that no one could clean a flue but himself, I wonder? WM. R. DAVIS, M.R.C.V.S.

Douglas, November 12th, 1887.

"VETERINARY SURGEON.—On the pressing solicitation of many friends who have informed me of the widespread feeling existing among owners of horses, that a thoroughly practical VETERINARY SURGEON is urgently needed in the Isle of Man, I have determined to COMMENCE BUSINESS in Douglas. I am a fully qualified member of the Royal College of Veterinary Surgeons, and Fellow of the Edinburgh Veterinary Medical Society, and for upwards of six years have been with Mr. Tedbar Hopkin, F.R.C.V.S., of Manchester, besides having had practice in various parts of England and Scotland. Any lame or sick horses, cattle, or dogs entrusted to my care, will receive strict attention and be treated in the most approved manner. Any message will be received for me at Messrs. Kelly and Gawnes' Livery Stables, Athol-street; or at Mr. Clarke's, 4, Mona-terrace, Finch-road, Douglas. Hoping to receive your patronage, and assuring you of every effort on my part to give entire satisfaction.—I am, respectfully yours, —, M.R.C.V.S."

### MEETINGS OF SOCIETIES.

The quarterly meeting of the Lancashire Veterinary Medical Association will be held at the Blackfriars Hotel, Manchester, on Tuesday, December 3rd, when a Paper will be read by Dr. Dreschfeld on "Experimental Investigations on the Cause of Malignant Endocarditis." Tea at 5 p.m.; business at 6 p.m.

### Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from J. A. Nunn, A.V.D., South Africa; W. Cox, Newcastle-on-Tyne; W. Williams, Edinburgh; J. McCall, Glasgow; A. Leather, Liverpool; H. Leeney, East Grinstead; Fred. Smith, A.V.D., Aldershot; S. M. Wilson, Aldershot; W. Mason, Gainsborough; J. Armstrong, Penrith; P. Walker, Halifax; W. Broughton, Leeds; W. Davies, Isle of Man; F. L. Gooch, Stamford; S. Villars, London; "A Reader"; "Zootomist."

BOOKS AND PAMPHLETS: *M. H. Hayes*, Soundness and Age of Horses; *J. Cockram*, The Horse in Sickness and How to Treat Him; *C. W. Mansell Moullin*, Sprains, their Consequences and Treatment; *H. Lee*, On the *Tapetum Lucidum*, and the Functions of the Fourth Pair of Nerves; Veterinary Reports on Some Diseases of Stock found in Victoria.

JOURNALS, ETC.: *St. James's Gazette*; *Journal of the Royal Agricultural Society of England*; *Annales de Méd. Vétérinaire*; *Echo Vétérinaire*; *Lancet*; *Journal de Méd. Vétérinaire*; *Wochenschrift f. Thiermedizin und Viehzucht*; *Hufschmied*; *Mark Lane Express*; *Recueil de Méd. Vétérinaire*; *British Medical Journal*; *American Veterinary Review*; *Live Stock Journal*; *Edinburgh Medical Journal*; *Thierarzt*; *American Live Stock Journal*; *Journal of the Agricultural Society of Victoria*; *London Medical Record*.

NEWSPAPERS: *Nebraska Farmer*; *Scotsman*; *York Herald*; *Leeds Mercury*.













